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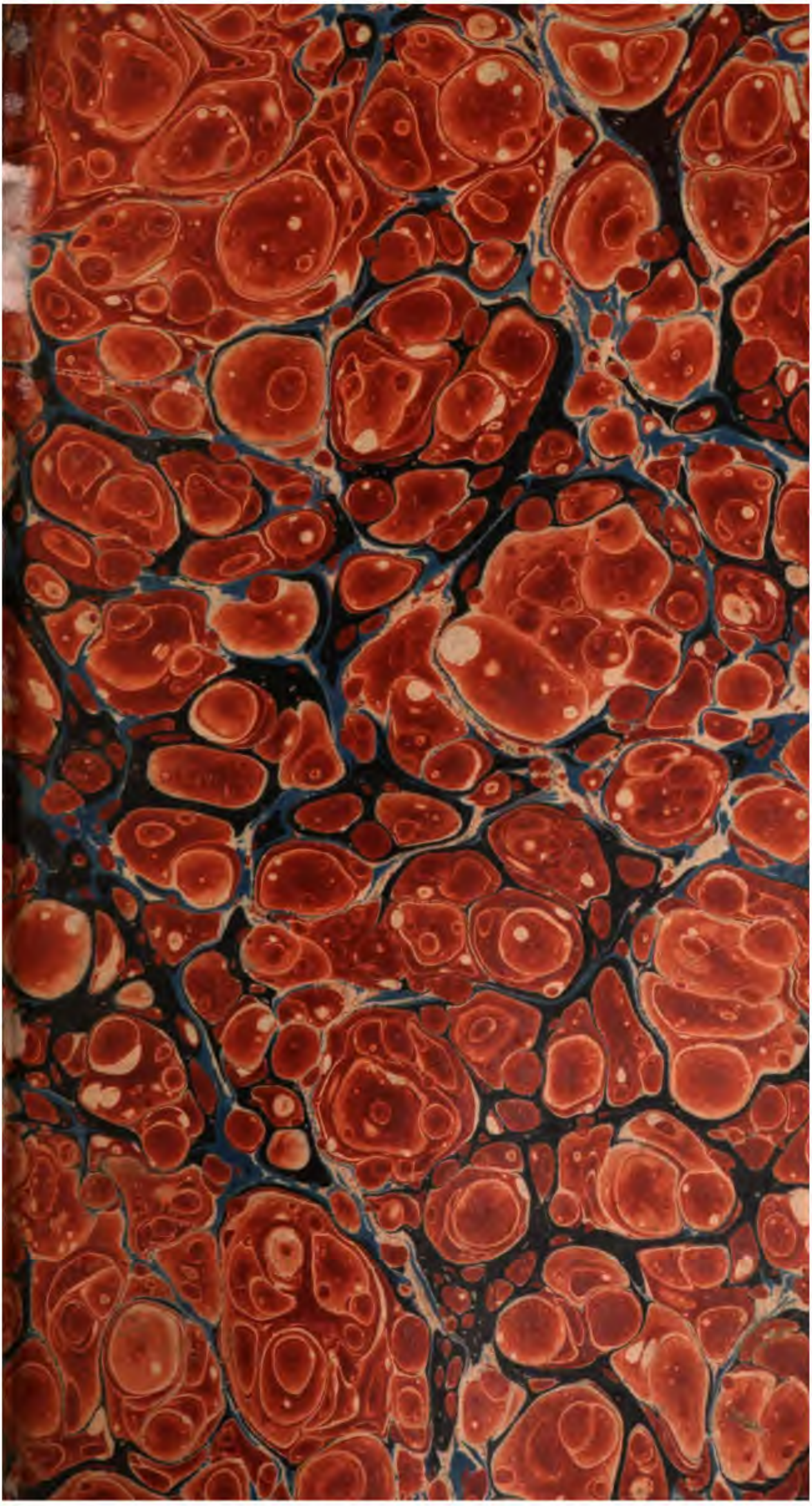

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FRONTISPIECE.

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London, Published by Thomas Kelly, 17, Paternoster Row.

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THE

PRACTICAL GARDENER,

AND

MODERN HORTICULTURIST,

BY

CHARLES MC INTOSH, C.M.C.H.S.

London:

PUBLISHED BY THOMAS KELLY, PATERNOSTER ROW.

1828.

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THE
PRACTICAL GARDENER,
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Modern Horticulturist;

CONTAINING
THE LATEST AND MOST APPROVED METHODS FOR THE
MANAGEMENT OF THE
KITCHEN, FRUIT, AND FLOWER-GARDEN, THE
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A COMPLETE SYSTEM OF MODERN PRACTICE, IN THE VARIOUS
BRANCHES OF
Horticultural Science.

EMBELLISHED WITH HIGHLY-FINISHED ENGRAVINGS OF SOME OF THE MOST
CHOICE AND VALUABLE FRUITS AND FLOWERS NOW
CULTIVATED IN THIS COUNTRY.

BY CHARLES M^{c.} INTOSH, C.M.C.H.S.
*Late Gardener to the Right Honorable the Earl of Braedalbane, and
Sir Thomas Baring, Bart. M. P., &c. &c.*

LONDON:
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PREFACE.

Amongst the various pursuits which occupy the attention of man, whether considered in regard to profit or amusement, few hold a more distinguished place than Horticulture. Even in the primeval ages of the world, before luxury had established its controul over every relation of human life, and the wants and necessities of man were confined to the immediate productions of his native soil, we even then find, that the culture of the garden was one of the primary objects of his industry, and the principal source on which he depended for his subsistence. With the lapse of years, the benefits of Horticulture gradually developed themselves, and the pages of history furnish us with innumerable examples, of the great and important advantages which have resulted to a country, in which its princes and nobility have applied themselves to the study of practical Horticulture, thereby opening fresh sources of national grandeur, and enlarging the sphere of individual prosperity. Grateful, however, as we ought to be to such exalted characters, who, indifferent to the elevated station in which their destiny has placed them, have boldly shaken off the fetters thrown over them by ignorance and prejudice, and have descended from "their high estate" to wield the spade and plough; yet our thanks are still more pre-eminently due to such men as a Bacon, an Evelyn, and a Platt, who have not only, by the transcendant power of their abilities, penetrated into the arcana of agricultural and botanical science, but who have also, by their invaluable writings, transmitted to us the results of their laborious researches, and thereby laid the foundation to those important discoveries in the practical management of the garden for which the present age is so happily distinguished.

Agriculture, and with it its twin-sister, Horticulture, may be considered as the immediate precursors of human civilization; and we find that all nations advanced in general and individual prosperity, in proportion to their progress in, and to their attachment to agricultural pursuits. The native beholds his fields ripening with corn—his vineyards blushing with the grape—the spirit of patriotism arises in him — his love of industry is awakened, and his country is enriched by his labors. Wherever the earth is richly cultivated, there plenty and happiness abound—the desert becomes peopled—the barren waste is transformed into golden fields of corn and the orchards and the gardens teem with their luscious fruits.

Horticulture has, within these few years, made more rapid advances towards perfection, than perhaps any other science, but it is a principle, which cannot be too forcibly and frequently impressed on the mind of those, who undertake the cultivation of a field or garden, that with the possession of mere theoretical knowledge, a positive failure must be the consequence. The knowledge of the management of a garden is not to be obtained by pertinaciously adhering to one particular system, however recommended by high and celebrated names. There are various and other important points to be taken into consideration, the particular knowledge of which is only to be acquired by the most constant perseverance and the most unremitting industry, and by reducing the principles of *theory* to the certain and infallible test of *practice*. But how is this knowledge to be acquired? how is it to be obtained at an expense which the limited income of the gardener or the peasant will enable him to bear? The answer is obvious: it is only to be acquired by closely attending to the rules and precepts laid down by those eminent men, who have made the science of Horticulture their sole study, who have had time and ability to examine the systems and the experiments of others, and who, by their indefatigable industry, have penetrated into the mysteries of nature, and wrested from her, as it were by force, those secrets, which she seemed determined should never be disclosed.

We disclaim all intention of decrying or depreciating the labors of those, who have preceded us in the important task which we have at present undertaken. The systems which they laid down for the management of a garden were probably the most proper, and the best adapted to the limited knowledge and experience of the times in which they lived; but as the spirit of discovery proceeded, and the light of improvement was more generally diffused, the ancient systems gradually gave way, and in process of time were utterly exploded. Were a gardener of the middle of the eighteenth century to be suddenly placed in a garden cultivated on the principles of the present day, his surprise would perhaps be as great as that of the untutored savage on seeing a gigantic fabric moving on the waters of the ocean, impelled by a little steam arising from a cauldron of boiling water. An Abercromby, a Miller, a M'Phail, and a Nicol, have, it must be acknowledged, contributed much to enlarge the sphere of our horticultural knowledge, and we readily and willingly offer them the meed of merit for the benefit which the country has derived from their labors; it must, however, be admitted, that the channels through which their discoveries and improvements have been hitherto disseminated through the country, are placed beyond the reach of the middling or lower classes, by the great expense with which the purchase of them is attended. The transactions of the Horticultural Society, however valuable and useful they may be to noblemen and gentlemen, are only circulated within the sphere of a chosen few, and are by far too expensive to become the property of persons of moderate fortune. In the purchase of those works, excellent as they may be in their kind, and highly useful as they may prove to the scientific or experimental Horticulturist, the mere simple Gardener, to whom the principles of practice are alone valuable, would find, that to obtain the single grain of corn of which he was in search, he has also bought a mass of extraneous matter, destitute to him of all benefit and utility.

It becomes therefore a desideratum, that a work should be circulated, in which those defects are remedied; in which the entire system of practical science is laid down in the most clear and explicit terms, and in which the nobleman, as well as the more humble operative gardener, may, at one glance, survey the experience and knowledge of the most celebrated practical men, and find those valuable rules laid down for their guidance in the management of their gardens, on which must depend the plenty and excellence of their produce.

The principles which should be particularly attended to in the compilation of such a work, and which will be found to have been invariably adhered to in the present instance, are conciseness, perspicuity, clearness of definition, a total absence of all abstruse and useless terms, and a general attention to the explanation of those minutiæ of horticultural science, which must necessarily render a work of this kind so invaluable to every individual, who takes upon himself the management of a garden, whether for amusement or for profit. We discard from our pages all the crude and undigested theories of the mere experimentalist, which only tend to mislead and confuse the mind, and we direct our attention solely to the dissemination of that solid and valuable instruction, by which every class of society, from the nobleman to the peasant, may be initiated in the practical department of one of the most interesting arts, which can occupy the attention of man.

Horticulture is not confined, at the present day, to a few individuals, who may have selected it as the immediate means of their subsistence; its spirit is transfused into all classes of society; it has become a favorite object of the attention and study of the fair sex, in the most elevated ranks of life. As a source of agreeable domestic recreation, especially to the female sex, few objects stand higher in estimation than the care of a garden. It is a source of health to the valetudinarian; the aspect of his flowers renovates his spirits, and in their balsamic odour he seems to inhale fresh life, and a delightful invigoration of his exhausted frame. What is more pleasing and gratifying to age, when the customary scenes of life have lost their relish, than to spend the evening of his days in the cultivation and amusement of a garden? he looks on his flowers as his children, and in their bloom and blossom feels himself young again. A taste for gardening, unlike all other tastes, diminishes not as we advance in years; it lives with us to the last hour, and it is our last wish, that the flowers which we have reared, should be strewn on our grave.

The gardens of the great were formerly under the sole control of a well-educated scientific man, but now we see the peeress directing the management of her own gardens and green-houses, by the force of her own knowledge and experience; we see her ransacking the most distant quarters of the world for those beautiful exotics, which are now the pride and beauty of our gardens; we see the opulent merchant, after a meritorious life spent in the harassing and uncertain walks of commerce, retiring to his suburban retreat, and there passing the evening of his life in the cultivation of his garden, or the management of his hot-houses. We see the peasant, after the labor of the day is over, recreating himself in the cultivation of his garden, that pride and boast of an English cottage: in fine, whithersoever we direct our view, we behold the spirit of Horticulture pervading every rank in life; it decorates the table of the nobleman with the luscious pine—it cheers the frugal board of the peasant with wholesome vegetables. If we direct our attention to the general aspect of the country, how much has the spirit of Horticulture contributed to its present beautified condition. Where the steps of our forefathers trod over wastes and wilds, now smiles the garden, with its fruits and flowers. There is scarcely a spot in the remotest parts of England, in the dells of Wales, or the glens of Scotland, in which the effects of the spade are not to be seen: it may be said, in fact, to have civilized the country; it has endeared the peasant to his native soil; it has opened to him a never-failing source of sustenance, at once prolific and wholesome, and it has imparted to him a spirit of pride and emulation, which enables him to surmount the cares and privations of a dependant life.

Partial, however, as we must naturally be supposed to be to our own individual mode of practice, as having been the result of a long-tried experience, we are by no means insensible to the merits of the various methods of management adopted by others, nor do we treat with indifference many late valuable inventions and discoveries, by which the operations of the garden are facilitated, and ultimate success more decidedly insured. In our exposition, however, of the practice and inventions of others, we beg not to be considered as giving our unqualified approval of their excellence or superiority over the method recommended by ourselves; but in a work of general practical utility, which this especially professes to be, we might expose ourselves to the imputation of partiality and prejudice, and even of ignorance, were we to exclude from our pages all mention of the different methods of management at present adopted by several eminent Horticulturists, and which, in many instances, are in reality founded on the most acknowledged principles of practical science. The positive and apparent advantages of each method are fully and impartially exhibited, and the option is thereby given to every individual, to adopt that particular one, which is most congenial to his taste and condition in life.

With the view of rendering this work more practically useful and perfect than some others which have preceded it, and which cannot fail to recommend it to the serious attention of every Horticulturist; it will be sufficient to enumerate the following subjects, which will come under discussion, the value of which cannot be too highly appreciated by every individual, who may contemplate the design of establishing a garden, either on a large or a limited scale.

The cultivation of culinary vegetables is the primary object of attention of every Gardener. In this work their mode of culture is exhibited, according to the latest approved system, arranged for every month in the year, at the same time that a specification is given of the choicest sorts, famed for the excellence of their flavor, or the abundance of their supply. The Fruit-garden is next in consideration, and therein we profess to give the most ample instruction for the management of our native fruits, accompanied by a new systematic catalogue of all their varieties and sub-varieties, as a guide to those, who may be desirous to obtain the choicest fruits, either as an ornament to the table, or as an article of commerce. Under the respective departments of the Hot-house, the Green-house, the Conservatory and Forcing-garden, the latest improvements in their management are displayed, exemplified by drawings of many valuable modern inventions for facilitating their respective operations. In the former department, the new system of heating forcing-houses by hot water is fully exhibited, accompanied by appropriate designs for the erection of the necessary apparatus. Our subordinate departments will treat of the nature of Soils—the application of Manures—the choice of situations for Gardens—the grafting and pruning of Trees—with every other topic connected with the practical management of a Garden.

The illustrative department of this Work will be enriched with engravings, executed in a superior style, of some of the choicest fruits and flowers, drawn and colored *ad vivam*, constituting itself a highly recommendatory feature, at the same time that it must prove of acknowledged importance to the Florist and the Pomonologist.

Having thus particularized the leading features of our Work, we confidently submit ourselves to the impartial decision of the Public, for the style and manner in which the various departments have been executed. Our claim to their approbation and patronage is founded on the production of a work, combining in itself the soundest principles of modern practice, with the latest improvements and discoveries of the most refined science. With our view constantly directed to the diffusion of useful, practical information, we have been equally attentive to those branches, which depend on ornament for their excellence, or which require in their management a higher degree of professional skill. To attain perfection belongs not to the human character, but in proportion as it is approached, so is the meed of approbation which should be awarded; it is by that standard that we are willing to be judged, and if by our efforts we have made a single blade of grass to grow where none grew before, —if we have awakened in a single individual, whether of high or low degree, a love and taste for the benefits and beauties of a garden,—if we have exploded a single erroneous custom in the practical department of Horticulture, or have simplified any of the difficult branches of the art, the principal objects of our labor have been attained, and we may say with the elegant writer of antiquity, that

"FINIS CORONAT OPUS."

THE

RISE AND PROGRESS

OF

GARDENING,

FROM THE EARLIEST PERIOD TO THE PRESENT TIME.

GARDENING, if not the most useful, is undoubtedly the most ancient of all arts: the sacred historian informs us, that the Almighty had no sooner created the universe, than he planted a garden eastward in Eden, and after this garden was finished, "The Lord God took the man, and put him into the garden of Eden, to dress it, and to keep it." This may be considered as the first account which we have in sacred history of the origin of gardens; although, in fabulous and profane history, we have many vague accounts of gardens, without conveying to us any positive information respecting their produce and cultivation.

We have no farther account of gardening in the antediluvian world, with the exception of the immediate results of the transgressions of our first parents, who, for their disobedience, were not only themselves thrust out of the garden of Eden, and doomed to till the sterile ground by the sweat of their brow, but also entailed a lasting curse upon all their posterity.

Soon after the general deluge, the Mosaic history informs us, that Noah no sooner found the earth in a state fit for cultivation, than he became a husbandman and planted a vineyard, and most probably a garden, and made wine.

Frequent mention is made by the same historian of vineyards, which were the gardens of those days, being cultivated by the majority of the people, through whose lands the children of Israel passed on their journey to the promised land.

Several gardens, belonging to Jewish princes and their subjects, are mentioned in the sacred Scriptures; but that of Solomon is the principal on record. Solomon was not only a cultivator of a garden, but is also the first person recorded in history in the character of a botanist. He is said to have been acquainted with all trees, "from the cedar of Lebanon, to the hyssop which springeth out of the wall."

The garden of Solomon was quadrangular, enclosed by a high wall, and contained, among other plants, the rose, the lilly of the valley, calamus, camphire, spikenard, saffron, and cinnamon; timber-trees, as the cedar, the pine, and the fir; and fruits, such as the grape, fig, apple, palm, and pomegranate. It also contained water, in wells and living streams, and the situation, in all probability, was contiguous to the palace, similar to the gardens of some of his successors.

Solomon had also a vineyard at Baalhamon, which he let out at one thousand pieces of silver, or £158. sterling, per annum.

Ahasuerus, also, had a garden near his palace, although we have no further account of it than that he returned out of the palace-garden into the place of the banquet of wine, where the queen was. (*Esther* vii. 7, 8.)

Ahab wished to have the vineyard of Naboth, the Jezreelite, to make it a garden of herbs, because it was contiguous to his palace. Upon being refused, he was very sorrowful, but his wife Jezebel found means to impeach Naboth, by false witnesses, of treason, and caused him to be stoned to death, and then delivered the desired vineyard into the hands of her husband.

Many other gardens are mentioned both in the Old and New Testaments, sufficient to bear ample testimony of the importance in which they were held by the Jews, and the people immediately connected with them.

Our account of the horticulture of the antient Jews is very imperfect; but, like that of the majority of the eastern nations, it was probably upon the same plan as is still adopted in Canaan, which is principally directed to the cultivation of cooling fruits, for the purpose of allaying thirst, and moderating the heat of the climate; aromatic herbs were also cultivated to give a tone to the stomach, and wine was made to refresh and invigorate the spirits. Their gardens, according to the most authentic information, produced cucumbers, melons, gourds, onions, leeks, garlick, anise, cummin, coriander, mustard, and various spices. Cucumbers, melons, leeks, and garlick were eaten in Egypt, and the cultivation of them was probably continued as long as the Egyptians remained a powerful people.

In the 2d chap. of Numbers, ver. 5, we find them murmuring to Moses at the want of these fruits and vegetables.

The gardens of the Hesperides are the next in antiquity to that of Eden, and were situated in Africa, near Mount Atlas, or, according to others, near Cyrenaica. They are described by a geographer of the sixth century before Christ, as being situated in a place eighteen fathoms deep, with an acclivity on all sides, and two stadia in diameter, covered with a variety of trees planted closely and thickly interwoven. The most noted fruits of this garden were the golden apples, supposed to have been oranges, which Hercules carried off by stratagem, although guarded by a dreadful dragon, which never slept. Independently of these apple-trees, many other ornamental trees and shrubs grew in this garden, such as olives, almonds, mulberries, arbutus, ivy, and myrtle.

The promised garden of Mahomet is the next in notoriety, of which we have any traditionary account, and it was the heaven of his religion. The pleasures of temporal gardens, which we so much covet and admire, are but of momentary consideration, compared with their duration in the gardens of Mahomet, which, to all true believers, were to last for one thousand years.

Having thus given a cursory detail of the gardens of the primary ages of the world, we will now proceed to a short review of those gardens of antiquity, of which an historical account is handed down to us by the Greek and Latin historians.

The garden of Alcinous is supposed to have been situated in an island of that name; but by some it is considered to be Corfu, in the Ionian Sea, and by others, with more probability, an Asiatic island.

It has been remarked by Sir William Temple, that this description contains all the justest rules and provisions which are requisite for the construction of the most perfect garden. The extent of the garden of Alcinous was, in those days of simplicity, looked on as great, even for a prince. It was enclosed to protect it from depredations, and, for conveniency, was placed near the gates of the palace.

This is the first garden, according to Harte, that we read of in ancient history. It contained only three or four kinds of fruit-trees, a few beds of culinary vegetables, and a small number of flowers. It contained two wells, one for the use of the garden, and the other for the palace.

The gardens of Laertes, described by Virgil, appear to have been nearly similar to that of Alcinous, but more varied in its productions. So attached was Laertes to his garden, that when his son Ulysses paid him a visit, he describes him to be found no where but in his garden, "attended by his servants, gathering shrubs to make a hedge, and the old man directing them, and weeding the plants with gloves on, because of the bushes."

The celebrated gardens of Babylon, commonly called the hanging-gardens, so celebrated among the Greeks, on account of their being elevated, according to some historians, upon vast blocks of stone, supported by pillars of the same material. These gardens are described by Strabo and Diodorus, as containing a square of four hundred feet on each side, giving an area of nearly four acres, and were carried to a considerable elevation, in the manner of several large terraces, one appearing incumbent on the other, till the height equalled that of the walls of the city. The ascent was from terrace to terrace by stairs ten feet wide. The whole pile was sustained by vast arches, raised upon other arches, one above the other, and strengthened by a wall of twenty-two feet in thickness, that surrounded it on every side. Large flat stones, sixteen feet long and four broad, were first laid on the top of the arches;

over these was a layer of reed, mixed with a great quantity of bitumen, on which were two rows of bricks, closely cemented with plaster. The whole was covered with thick sheets of lead, on which the mould of the gardens was deposited, which was so deep, that the largest trees could take root in it, and with these the terraces were covered, as well as with plants and flowers.

These extraordinary and elevated gardens were built by Nebuchadnezzar, for the purpose of gratifying his queen Amistis, who, being a native of Media, could not be reconciled to the flat appearance of Babylon, which, for many miles round, was an immense level space; and Media, her native country, being rather hilly, and presenting that undulation of surface, which has always been considered an indispensable beauty in landscape. This is the first instance we have on record of any attempt to give to a level surface that undulating effect which is so much admired in nature. It is therefore probable, from the above circumstance, that landscape-gardening had been studied in Media to some extent, and that the queen of Nebuchadnezzar had not been altogether an inattentive observer of the beauties of landscape. The erection of these gardens, from whatever motive they may have been erected, reflects greater credit on this king than any other action of his life.

We have another instance, of nearly the same date, of the preference given to lofty situations for gardens. Diodorus Siculus observes, "When Semiramis came to Chanon, a city of Media, she discovered on an elevated plane a rock of stupendous height, and of considerable extent. Here she erected another garden, exceedingly large, enclosing a rock in the midst of it, on which she erected sumptuous buildings for pleasure, commanding a view both of the plantations and encampments." This Amazonian queen had, it appears, a taste for gardening as well as for war.

Cyrus, the younger, was a great patron of gardening in Persia; and in whatever part of his dominions he fixed his residence, he carefully cultivated and established gardens. Plutarch informs us, that Lysander, the Spartan general, found Cyrus cultivating his garden with his own hands at

Sardis; he was informed by Cyrus that the arrangement of his garden was entirely his own work, and that many of the trees were planted by himself. Lysander was astonished to hear this, and expressing his surprise to the king, Cyrus said, "Do you wonder at this, Lysander? I swear, by the diadem I wear, that if I be in health, I never eat any food until I have exercised my body till I perspire, sometimes in martial exercises, at other times in gardening, or similar laborious exercises of husbandry."

Cyrus had many gardens: one of them, at Celenæ, was of such extent, that he mustered the Grecian forces, to the number of thirteen thousand men, in it. Gardening must, therefore, have been reduced to a regular science, under such a patron as Cyrus, and we are informed by Pliny, that, in the Persian gardens, the trees were planted in straight lines, and regular figures. Among their trees, the Oriental plane, and, what may appear to us remarkable, the narrow-leaved elm, (now called English,) held a conspicuous place. Odoriferous plants, such as roses, violets, &c., were planted along the margins of the walks.

Epicurus, among the Greeks, delighted in the pleasures of the garden, and he chose one for the spot in which to teach his philosophy. Among the flowers cultivated by the Greeks were the narcissus, violet, and rose.

Lord Bacon and W. Mason considered gardening as rather neglected among the Greeks, notwithstanding the progress of the sister art of architecture, which gave rise to his lordship's remark, "That when ages grow to civility and elegancy, men come to build stately sooner than to garden finely; as if gardening were the greater perfection."

The garden of Tarquinius Superbus, five hundred and four years before Christ, is mentioned by Livy and Dionysius Halicarnassus, as among the first in the annals of Roman history. It adjoined the royal palace, and abounded chiefly with roses and poppies.

The next in rotation was that of Lucullus, near Baiæ, in the bay of Naples. In this garden, the peach, cherry, and apricot, were first introduced from the East, and were probably brought by Lucullus himself on his return from one of his expeditions from the eastern part of Asia, where it is most likely that he contracted a taste for gardening.

In the gardens of the Augustan age, Virgil describes the chicory, cucumber, ivy, acanthus, myrtle, narcissus, and rose; but of the progress of gardening in this age, tradition is very silent. From Cicero and Pliny the elder, we learn, that the quincunx manner of planting trees was then generally in use; and by Martial we are informed, that the clipping of trees was introduced by Cneus Matius, a friend of Augustus.

That which has been termed the Dutch style of gardening was used about this time, and it is supposed to have been the style adopted by Pliny, in the formation of his garden, and it was used in this country in the reigns of King William and of Queen Elizabeth, specimens of which still remain, the most perfect of which is at Holm-Court, in Herefordshire, and is supposed to have been laid out by Loudon and Wise. This taste, displayed by Pliny, appears to have prevailed until the decline of the Roman empire, and, owing to its having been displayed in a minor degree in the gardens of religious houses during the dark ages, as well as in the writings of Pliny, has thus been handed down to modern times. "Every country-house," says the Roman historian, "had its gardens in the days of Pliny; and it is not too much, taking this circumstance in connection with the remarks of Columella, to hazard a conjecture, that even the Romans themselves considered their gardens less perfect than their houses."

The following fruits were introduced into Italy by the Romans, viz.: the peach from Persia, the fig from Syria, the pomegranate from Africa, the citron from Media, the apricot from Epirus, cherries from Pontus, and apples, pears, and plums from Armenia. Hirshfield observes: "The rarity and beauty of these trees, joined to the delicious taste of their fruits, must have enchanted the Romans, especially on their first introduction, and rendered ravishing to the sight, gardens which became insensibly embellished with the many productions which were poured into them from Greece, Asia, and Africa." They also attempted, with considerable success, the forcing of fruits. Sir Joseph Banks conjectures, from the Epigrams of Martial, that both grapes and peaches were forced; and Pliny says that, by means of *specularia*, or plates of the *lapis specularis*, Tiberius had cucumbers in his garden throughout the year.

For a long period after the fall of the Roman empire, gardening, as well as all other arts, fell into decay, and would possibly have been almost forgotten, had not the monks, who were the only class of men whose particular station in life enabled them to accomplish the undertaking, continued to cultivate the fruits of the earth. Their sacred profession secured them from open violence, and the secluded life which they generally led, enabled them to devote a considerable portion of their time to horticultural pursuits, and which they found conduced both to their health and comfort. Many of the old pear-trees growing at this day, were planted by the monks, and some of the early sorts were introduced into this country by them from different parts of the continent, and are to be found in some of the monastic gardens at the present time.

In Italy, gardening was revived about the beginning of the sixteenth century, under the patronage of the Medici family. Their gardens were generally in the geometric style, similar to those of Pliny, and they continued in that form till about the middle of the last century, when a style more agreeable to nature was introduced. About the beginning of the sixteenth century, the taste for distributing statues, &c. in the gardens, was re-established; and about the end of the same century, hydraulic devices were introduced, for which the gardens at Tivoli were so distinguished.

About the beginning of the seventeenth century, the formal and stiff square-clipt hedges, straight walks, and trees uniformly lopped, formed the distinguishing features of a fine Italian garden. Since that period, gardening has progressively improved in Italy; but the Italians are still far behind this country in horticulture, although they have one of the finest climates in the world in their favor.

The Dutch have long been celebrated for their skill in the culture of flowers, and this taste is thought to have originated with their industry, about the beginning of the twelfth century; the study of flowers being in some degree necessary, in affording patterns for the ornamental linen and lace manufactories.

The Dutch being a maritime people, were amongst the most early introducers of plants from the Levant and from the two Indies; and their gardens contained, at one period, a much greater number of plants than all the rest of Europe combined. The civil wars, however, which desolated that country in the sixteenth century, were also the cause of the destruction of their gardens. It was in the Botanic garden of Leyden that Boerhaave, who was then Professor of Botany, first exemplified the principle for adjusting the slope of the glass of hot-houses, so as to admit the greatest number of the sun's rays, according to the latitude of the place, &c. It was in this garden that the two numerous genera of the geraniums and mesembryanthemums were first introduced from the Cape. As Holland is not well supplied with gravel, the walks of this garden are laid with a mixture of peat-moss, and rotten bark reduced to a powder.

The Dutch have been long, and are still noted for their skill in the cultivation of bulbs of all sorts. Hirschfield states that, in the register of the city of Alkmaar, in the year 1637, it is recorded that one hundred and twenty tulips, with their offsets, were sold publicly, for the benefit of the Orphan Hospital, for nine thousand florins, and that one of those flowers, named the Victory, sold for four thousand two hundred and three florins. The prices given for such flowers appear enormous, but now they are not so high as formerly; the highest price demanded for the most rare being about one hundred guilders, or eight pounds two shillings and sixpence for each bulb.

The Dutch and Flemings are eminent as fruit-gardeners as well as florists; and they possess many fine varieties of fruits, particularly pears. Culinary vegetables are also brought to great perfection; and Brussels is particularly noted for a species of greens or sprouts, which bear the name of that town, and which have been long cultivated in its vicinity. The gardens of the cottagers in the Netherlands are much better managed, and more productive, than in any other country. Every cottage has a garden attached to it, and every available particle of matter capable of acting as a manure is collected, and when properly ameliorated by repeated turning and frequent fermentations, is applied to the ground. The plants in general cultivation are the cabbage tribes, including the Brussels sprout, white beet, parsnep, carrots, yellow and white turnips, peas, beans, kidney-beans, potatoes, &c.: the fruits are currants, apples, and pears, and the vines are often trained upon their cottages. Their flowers are double wall-flowers, rockets, stocks, pinks, roses, and honey-suckles.

Gardening in France was little attended to before the eighth century, when Charlemagne introduced some particular fruits, and recommended the use of vineyards and orchards. Louis the Fourteenth, about the middle of the seventeenth century, introduced splendour in design; and about the close of the eighteenth century, English gardening began to be adopted in France, and was pursued for a time with considerable enthusiasm. The works of the French on gardening are luminous, and exhibit an enlarged knowledge of the subject, but the charge against them is not without foundation, that their practice has not kept pace with the science which their writings display. English gardening in France, during the Consulate was little attended to; several places were, however, laid out or altered by Blaikie. Since the Revolution little has been done in the way of improvement: the unsettled state of the people may be some excuse.

Few cottagers in France are without their little gardens, and they display, particularly in the northern parts, considerable neatness in the management of them. The gardeners of the nobility, for the most part, are very illiterate, and ignorant of the first and most common principles of their profession: they are no better than the common labourers employed in digging an English garden; and, under such circumstances, gardening cannot be expected to make any rapid strides towards perfection.

Buffon, the celebrated naturalist, was so enamoured with his garden, that he erected a pavilion in it, in which he could study without interruption. To this retreat this great man daily retired at five o'clock in the morning, and was then inaccessible to all visitors. This retreat was justly styled the cradle of natural history, by Prince Henry of Prussia.

Gardening is supposed to have been introduced into Germany, Austria, Prussia, Saxony, and Denmark, by the Romans, and after the decline of that empire, preserved by the monks, who, during the dark ages, were domiciliated in different parts of the Roman empire, and who, in their dispersion in the distant countries of Europe, carried with them many of the seeds and plants of the best indigenous fruits of Italy.

Horticulture appears to have revived under Augustus the Second, elector of Saxony, who is reported to have augmented the varieties of fruits, and to have planted the first vineyard. The Germans are particularly fond of the different sorts of cabbages and borecoles, of which they make a variety of dishes, particularly broths and soups; they also preserve them salted and fermented for winter use, under the name of *sauer-kraut.* In the cottage gardens of Germany little else is grown than the cabbage-tribe, particularly reed-greens and potatoes; this resembles much the productions and uses of a Scotch cottage garden. A taste for flowers is by no means general among them.

By what means, or at what time, gardening was introduced into Switzerland, we have no accounts; but the probability exists, that it took place at an early period. The Swiss took the Romans in Italy as their guide; and their present mode of culture differs little from that adopted by their instructors, They are diligent cultivators of the ground, and have their vineyards and orchards in tolerably good perfection. In their culinary gardens, the cabbage, potato, and white beet are cultivated; kidney-beans and peas they also grow in considerable quantities. The cottagers pay a laudable attention to the management of bees, which yields them a handsome profit. This ought to be more attended to by our cottagers, as the certain means of rendering them less dependent on the landed agriculturist, whose contracted and narrow mind, in too many cases, fancies it to be his interest to keep his peasantry in a state of the most abject submission by nailing them to the soil, or, in other words, keeping them in that state of wretched pauperism, that they are no more their own masters than the slaves on an estate in the West-Indies, and thus at once defeat all their exertions, and remove every stimulus either to the exercise of habits of industry, or to the promotion of their personal welfare.

Gustavus Adolphus of Sweden, appears to have encouraged horticulture in that country and in Norway, before whose time little progress had been made in either country in any branch of agricultural science. At a subsequent period, Charles the Twelfth procured several plans from the celebrated French gardener, Le Notre, and various kinds of trees and plants were sent from Paris to Stockholm. The greater part of our common culinary vegetables are now cultivated in Sweden, and even in many parts of Lapland, where the climate is not too inclement.

About the beginning of the eighteenth century, Peter the Great of Russia, applied himself to the study of horticultural science, as well as to that of the other arts which were introduced into this country by that great man, and which laid the foundation of the present power and prosperity of that extensive empire. Peter seems to have adopted the geometric style, or that which had been previously the style of the gardens of Pliny, and in this undertaking he was probably assisted by Dutch gardeners, whose method he had seen and approved during his residence in their country. The Empress Catherine, towards the latter end of the same century, introduced a more modern style, in which she appears to have given the preference to the English, for which purpose she procured an English gardener, who only a few years ago returned from Russia, and died in his native land at an advanced age.

Catherine the Second established the first botanic garden at Petersburg, for the use of the Academy of Sciences; and it was under the auspices of this Empress that the celebrated gardens of Peterhof and Zsarkoe-Seloe were established. In point of extent and ornamental decoration, the former stand unrivalled, and will remain a perpetual monument of the power and perseverance of man in combating, and eventually overcoming the numerous obstacles which Nature frequently throws in the way of the accomplishment of his plans.

The climate of Russia is not favorable for horticultural purposes, but it is astonishing to observe the quantity of fruits and vegetables which are annually reared in the Russian hot-houses.

English gardening was introduced into Poland about the end of the eighteenth century, by the Princess Isabella

Czartoryska, who also wrote a small treatise on the manner of planting English gardens, and which was published at the commencement of the present century. She resided some time in this country, and cultivated a taste for gardening, which enabled her, on her return, to make considerable improvements in her own country. Horticulture is, however, still at a very low ebb in Poland, being chiefly confined to the nobility, who may have taken up a temporary residence in this country, and imbibed a taste for gardening, or who, by serving in the army in France and Germany, may have obtained a knowledge of the systems adopted in those countries.

The study of plants is of great antiquity in Spain; having been introduced by the Arabs, who, at an early period, were acquainted with, and initiated in the study of botany and physic. No country has enjoyed more favorable opportunities of excelling in the cultivation of exotic plants than Spain. The climate is salubrious and temperate, and the Spaniards might have monopolized for a time all the vegetable treasures of Peru, Mexico, and Chili. Culinary gardening requires little skill in Spain, the soil and climate being particularly adapted for it. Onions and water-melons are grown in such plenty as to form a considerable branch of the export trade of that country. Onions and garlic are their favorite vegetables. No European country is so well stocked with a variety of fruits; and, independently of all the fruits of Italy, native or acclimated, they possess the date, the tamarind, and other West-Indian fruits; and in some of the southern provinces, the pine-apple flourishes in the open air. Gardening in Portugal is very little attended to, and is nearly in the same degraded state as it is in Spain.

Having thus entered cursorily into a concise review of the horticulture of Europe, we will now proceed to inquire into the state of gardening in Britain, with reference to its introduction and progress.

Before the Roman invasion, the Britons were so deeply immersed in ignorance, that they cannot even be supposed to have cultivated any vegetable productions, being content to live on acorns, the bark of trees, and whatever other roots they could pick up by accident. Dio Cassius informs us, that they had ready, on all occasions, a certain kind of food, of which, if they took but the size of a bean, they were not troubled with either hunger or thirst for a considerable time: this is supposed to have been the roots of the *Orobis tuberosus*, the *Carmeil* of the ancient Gauls and modern Highlanders. History informs us, that the soldiers of Cæsar were often reduced to the necessity of subsisting upon the same roots for food.

From the remains of Roman villas discovered in many parts of Britain, we are left to conclude, that the system of gardening practised by the Romans, was adopted, both for ornament and use, by the generals and others of the Roman nobles, who accompanied the several expeditions into this country. Pliny expressly says, that cherries were introduced by the Romans about the middle of the first century; and that the vine was also introduced is evident, for Tacitus says, that wine was made on Britain towards the end of the third century, under the Emperor Probus. It is also probable that they introduced some of the onion tribe, and likely some of the brassica, in their then cultivated state; and that they rendered, by cultivation, the *brassica oleracia* of our shores an article of food, as, in some of the oldest records, both kale and leeks are mentioned.

When the Romans abandoned this country to support the tottering fabric of their own empire, it is probable that gardening was quite neglected; as the Saxons, who succeeded them, had little time or taste for rural affairs. It is evident, from historical documents, that horticulture met with some encouragement under William the Conqueror, who may be supposed to have attained to some partial knowledge of it on the continent, where it had flourished under the patronage of Charlemagne.

It is generally supposed that the majority of our fruits, particularly apples and pears, were introduced into this country by the monks, in the days of their greatest luxury and splendor, and it is probable that the indigenous fruits of this island were cultivated in the monastic gardens. Vineyards and orchards were planted by them, in every place in which they domiciliated themselves, if the situation were at all favorable. Many of these orchards remain to this time in a sufficient state of preservation to prove to us, that they were planted by people who cultivated them upon good and scientific principles. One in particular is still remaining at Holm-Lacy in Herefordshire, where the trees are in a very healthy state, and yield sufficient crops to render them a valuable acquisition to the clergyman, in whose garden the greater number of them now flourish. It was in this place that William Fitz-swain, in the reign of Henry the Third, founded a Premonstratensian canonry, and it was by the residentiary canons that this orchard was planted. One pear-tree in particular deserves mention, which has been proved to have produced four hundred and forty bushels of fruit in one season, and that fruit produced fifteen hogsheads of perry, of one hundred and twenty gallons each.

Other instances occur of trees of equal age still flourishing with vigour, and bearing an abundance of fruit. In an orchard on the Braedalbane estates, on the margin of Loch Tay, one tree still remains, which is similar to the tree at Holm-Lacy, not only in the abundance of its produce, but is also exactly the same sort of pear, and has in all likelihood stood there since the orchard was first planted, which we find was effected by the Queen of Alexander the Third, of Scotland, who brought a convent of nuns from Scoone, and built a nunnery on the island, of which the remains are still to be seen. These trees, if we may use the expression, have stood their allotted time in their natural or original position; and when overtaken by old age, have laid themselves prostrate on the ground, and from their old trunks and layers branches have emitted roots, and their lateral branches have taken a perpendicular direction, and in their turn have become large trees, like the Phœnix out of the ashes of its parent.

The longevity of the pear is perhaps only exceeded by that of the oak, the chestnut, and the cedar, at least it attains to a greater age than any other fruit-tree with which we are acquainted. These old pear-trees have adopted a rather uncommon mode of propagation, or rather prolongation of their existence; for when the trunk is no longer able to support the branches, and the sap rises slowly and scantily to their support, they bend at length to their native earth, to renew their own existence in the progeny which they send forth. Nature, in many cases, immediately before dissolution, makes one grand effort to propagate the species, and this is obvious in old trees being greater bearers than the younger ones; and also, that trees in a sickly state often die when loaded with fruit. In this instance, the pear-tree, as if loth to relinquish the vital spark, makes a grand effort, and by striking root from its larger members, wherever they touch the ground, becomes, as it were, young again; and upon the same principle, its existence may be prolonged till the end of time, and an immense space be covered by its branches. The large tree at Holm-Lacy, already alluded to, covers nearly a quarter of an acre.

The first account we have in history of gardening in Britain, belongs to the twelfth century, in which Brithnod, first Abbot of Ely, is celebrated for his skill in forming the extensive gardens and orchards of that monastery, which he stocked with a great variety of herbs, shrubs, and fruit-trees. This monastery may be considered as the cradle of the art of grafting, as it was there first practised by Brithnod, who probably had either learned the art in Italy, or had been instructed in it by some brother ecclesiastic who had emigrated from that country. In Scotland, at this early period, David the First had a garden at the base of Edinburgh Castle. This king had an opportunity of observing the gardens of England under Henry the First, when Norman gardening was prevalent; and it is probable that that king was prompted by his genius to combine elegance with utility in the establishment and cultivation of his gardens.

William of Malmsbury speaks of a considerable number of orchards and vineyards being in the vale of Gloucester. In the year one thousand one hundred and forty, we find that a vineyard was planted at Edmondsbury, for the use of the monks of that monastery.

In the year one thousand two hundred and ninety-four, the monks of Dunstable were at considerable expense in repairing the walls of their garden and herbary; and about this time several kinds of fruits were in active cultivation. Mathew Paris, speaking of the backwardness of the season at this period, says, that "apples were scarce, pears still scarcer, but that cherries, plums, figs, and all kinds of fruits included in shells, were almost quite destroyed."

Till about the beginning of the reign of Henry the Eighth, many of the now more common culinary vegetables, such as cabbages, &c., were imported from the Netherlands. It was not, says Hume, till the end of the reign of that king that any salads, carrots, turnips, or other edible roots, were produced in England, their culture not being properly understood. About the end of this reign, some progress had been made in the cultivation of vegetables and fruits; for we are informed that the king's gardener introduced musk-melons, apricots, and Corinth grapes, and also that at the same period different kinds of salads, herbs, and esculent roots, were brought for the first time from Flanders. About this time, a taste for florists' flowers began to be cultivated in England, and it is supposed that they were introduced into this country from Flanders, by the worsted manufacturers, during the persecutions of Philip the Second. It was also to the cruelties of the Duke of Alva that we are indebted for receiving, through the same channel, July flowers, carnations, and Provence roses. Flowers and shrubs appear, however, to have been long known and prized before this time.

Henry had a garden at his palace of Nonsuch, in Surrey, which was enclosed with a wall fourteen feet high, and in which the Kentish cherry was first cultivated in England. During the succeeding reign of Elizabeth, gardening appears to have made some farther progress, and it was at this period that the tulip, the damask and musk roses, were first introduced. Elizabeth is said to have been attached to flowers; and Gerrard published his herbal, in which he mentions a London apothecary, who was celebrated for growing tulips, and rearing new varieties every year. Botanic gardens now began to be established; that of the Duke of Somerset, at Sion-House, seems to have been the first. Sir Walter Raleigh introduced the potato and tobacco about this time; and many other eminent persons now began to collect different varieties of fruits and vegetables from all parts of the world. During this reign, Hatfield, Holland-House, and many other noted places, were planted, and considerable attention paid to landscape gardening. The pleasure-garden appears to have been reserved for Elizabeth's reign, when a square parterre was enclosed with walls, scooped into fountains, and heaved into terraces. During this Princess's reign, there was an Italian who visited England, and published, in 1586, a thick volume of Latin poems, in one of which, called the *Royal Garden*, he describes a labyrinth, and hints at Her Majesty being curious in flowers.

Charles the First appears to have been the first monarch who patronized gardening to any extent in this country. His kitchen gardener was Tradescant, a Dutchman; and Parkinson was his botanic gardener, or herbalist, who was the first author, according to Mr. Neill, of any thing like an original work on English gardening. Cauliflowers and celery were then as great rarities as peas in the time of Henry the Eighth; potatoes were then rare, and the Jerusalem artichoke was in common use. Parkinson describes 58 sorts of apples, 64 of pears, 61 plums, 21 peaches, 5 nectarines, 6 apricots, 36 cherries, 23 vines, 3 figs, with quinces, medlars, almonds, walnuts, filberts, and the common small fruits: an amazing catalogue of fruits for those days.

About this time, florists' flowers were cultivated among all the manufacturing people of Norwich, London, Manchester, Bolton, &c. Oranges and myrtles were cultivated at Kew, Ham-house, &c.; and the larch, which now rears its head on almost every bleak mountain in Scotland, was then a greenhouse shrub, and kept as a curiosity, and the almost equally hardy laurel was then protected from the nipping frosts of winter by being covered over with a blanket.

Cromwell was a great promoter of agriculture and gardening; and his soldiers, whithersoever they went, introduced all the latest improvements in those two important and profitable branches of human industry. They introduced cabbages into the north of Scotland, when quartered at Inverness.

After the restoration of Charles the Second, that monarch introduced French gardening; and, to carry his plans into execution, brought over from France, Le Notre, the celebrated French landscape gardener, who planted Greenwich and St. James's parks, Carlton and Marlborough gardens. Charles the Second is supposed, by Daines Barrington, to have had the first hot-houses and ice-houses erected in this country, although certain fruits had been long before reared and brought to maturity, by the power of dung-heat, by the London gardeners.

In this reign flourished the celebrated Evelyn, who was a scientific promoter of gardening, and whose Sylva, and other works, still remain to adorn the literature of the country. Sir William Temple not only wrote on gardening, but also practised it, to a considerable extent, at his seat at East Sheen, to which place he introduced from the continent some of our best peaches, apricots, cherries, and grapes. He also attended particularly to the training of his trees on the walls, a system of management at that time in its infancy, and deemed by many of the most celebrated horticulturists of the day as an innovation on the order of Nature, and checking the luxuriance of the fruit-tree.

The gardens of Kew then belonged to Sir Henry Capel, where he is said to have had the choicest collection of fruits in England, and that he was better versed in the management of them than any other living horticulturist. Daines Barrington supposes him to have been the first person of our nobility who paid any attention to their gardens, or bestowed any expense in the cultivation of them.

About the beginning of the eighteenth century, horticulture began to assume a new character. The culinary and fruit-gardens were not only assiduously and successfully cultivated, but forcing had been tried to a considerable extent. In 1719, pine-apples were successfully cultivated at Richmond, by Mathew Decker, and afterwards by Blackburn, in Lancashire. The vine was cultivated at Rotherhithe, by Warner, who is said to have raised from seed the species still called Warner's Black Hamburg. The first instance we have on record of the successful forcing of the vine, took place at Belvoir Castle in 1705.

Many good practical and scientific gardeners lived about this time: Miller, curator of Chelsea Botanical Garden, and author of the well-known dictionary; Lawrance, Bradley, and Switzer; and, towards the middle of the century, lived Hill, Abercrombie, Marshall, M'Phail, and many others. In the early part of that century, Justice and Reid wrote on gardening in Scotland, although the science had before their time acquired a considerable degree of perfection in that country. The gardens of Justice, and those of the Baron Moncrieff, at Moredau, where Ryle practised as his gardener, and published his treatise on peaches and vines, were, at the beginning of the eighteenth century, supposed to be the highest cultivated and the richest stocked in the whole country. Gardening in Scotland has long been attended to, and a degree of perfection attained which is not to be met with in any part of Europe, taking into consideration all the circumstances of climate, and other physical disabilities. The extraordinary strides that horticulture has made towards perfection in the present century, are truly astonishing; and every day some fresh discovery is announced, which tends to remove a prevailing evil, or which facilitates the operations of the practical gardener.

THE
PRACTICAL GARDENER
AND
MODERN HORTICULTURIST.

CHAP. I.

FORMATION OF THE CULINARY
OR
KITCHEN-GARDEN.

THE production and cultivation of those vegetables, which contribute in a very essential degree to the support of man, have a prior claim on our consideration and attention. Every day, the produce of the garden is spread on the tables of the gay, the grave, the rich, and the poor. From the prince to the humble cottager, a garden is an object to which a certain degree of importance is attached, and each endeavours to give it the highest possible cultivation, in order to supply his various wants and desires. In a political point of view, the culinary garden must be considered of great importance to the public; for which reason, we find the grounds surrounding all great cities and considerable towns appropriated to the culture of it. In the environs of London for a considerable extent, little else occupies the ground but gardens, the produce of which finds a ready sale in the different markets of the metropolis. Gardens are not only important as affording the most wholesome food to the inhabitants, but also on account of the employment they afford to hundreds of industrious people, who otherwise would become a burthen on their parish. In this light, abstractedly, they must be considered as a national good. Neither is the cultivation of them less understood, nor the benefits arising from them less appreciated, in the neighbourhood of our manufacturing towns, where the confined and sedentary life of the inhabitants requires food of a lighter nature, and of more easy digestion, than is required by those, who are employed in the more active and laborious professions of life. With the conviction, therefore, that the cultivation of vegetables is of so much importance to society, "we should use all diligence in the proper cultivation of the soil, well knowing that the more we do to it, the more will it return to us its fruits in abundance."

The first and chief object towards obtaining a good garden is to be particular in the choice of a favorable situation; for, if this be not attended to, all hope of luxuriant crops must be abandoned. The second is to make choice of a good soil. Sometimes both of these grand objects are to be met with naturally in the same place, and often both of them have to be assisted, or the deficiencies supplied by art. But wherever a situation naturally presents itself, that is sheltered from cutting winds and well exposed to the influence of the sun, and the elevation sufficiently great to be above the ill effects of damp vapours, and yet at the same time not too high nor too cold, and the soil good, many sacrifices should be made for its adoption. Natural situations are generally much better than artificial ones, and always more agreeable to the economist.

Much has been said, and not without great justice, regarding the choice of a situation; and as it is of the last importance, both for the growth and flavour of all culinary productions as well as for the general features of the other parts of a residence, we will make it the first subject of our disquisition. In all places, where circumstances will permit, the kitchen-garden should be placed at such a distance from the mansion as to be concealed from the view, particularly from the principal windows; but although it is here recommended to be hidden from the house, it does not thence follow, that it should be cooped up in an obscure corner of the park or plantations, neither should it be, as it were, engrafted on the farm-buildings, which is too often the case in very considerable places in this country. The distance which it should be from the house must necessarily depend on a variety of circumstances, of which the taste of the owner and the size of the place should be first consulted. In a princely residence, the culinary gardens may be at the distance of a quarter, or a half, or even a mile from the mansion, and approached either by a carriage-drive, or by circuitous gravel or grass-walks, according to the difference of the situation. The space between the garden and residence should, if circumstances will admit of it, be occupied first with the lawn around the house of a size and style corresponding to the magnitude and architecture of the building; to this the flower-garden should adjoin, which it is desirable should always be near the house; and next in order, should follow the shrubbery or arboretum; the kitchen-garden and orchard terminating the whole. An arrangement of this sort, so varied as to suit the circumstances of the place, will generally be found to have a good effect, and the combination of the whole in one piece will add much to the convenience both of the proprietor and the person, who has the general charge of the grounds. Even in small places, this arrangement (or probably an improvement on it) may be easily effected; the scale being smaller, the parts may be better proportioned, and, by the assistance of a little art, five or six acres, or even much less, may be so arranged as to give the appearance of grounds occupying ten times that extent.

The culinary and fruit gardens, being at a considerable distance from the mansion, present the owner with an opportunity of displaying his taste and fortune in the disposal of his grounds. If they be well arranged and respectably kept up, they will be an attractive object, and be, as it were, a reason for conducting the stranger through a labyrinth of pleasure-ground. From the kitchen and fruit-garden, the walks may be carried on to the park, the lake, the village, or, if the proprietor be a sportsman or agriculturist, to the kennels or farm.

SITUATION AS REGARDS SHELTER.

A certain degree of shelter is of the utmost importance to the growth of the productions of the kitchen-garden, yet not so as to be shaded by lofty trees from the full rays of the sun. Shelter is necessary, because it renders the garden warmer, by the concentration of the rays of heat from certain bodies, particularly from the walls; it is also necessary as a preventive to the bad effects of cold cutting winds. Those points from which the most inclement winds generally blow should be guarded (if not naturally) by trees, and no time should be lost in planting them. In making choice of the sorts of trees, those should be particularly selected which are of rapid growth;

> Nor will art, that sovereign arbitress, admit,
> Where'er her nod decrees a mass of shade,
> Plants of discordant sort, unequal size,
> Or ruled by foliation's different law;
> Studious with just selection, those to join
> That earliest flourish, and that latest fade.

Sometimes the situation is rendered sufficiently sheltered by the natural shape or situation of the ground, but if this be not the case, recourse must be had to the planting of trees, these however must be kept at such a distance from the walls as to guard against the evil of being too much shaded, as well as to prevent the roots of the trees, of which the plantation is formed, from robbing the borders, which may surround the walls. The winds principally to be guarded against are the north, the north-east, and north-west, for it is from those points that our coldest winds proceed. In the formation of a new garden, the artist has it probably in his power to adopt a situation already sheltered, and, if other circumstances be favorable, the chance of this situation is not to be lost sight of; for if the garden has to be sheltered by plantations made after it is finished, a certain loss will be sustained. In the event of having the plantations to make, it will be an object to get them up with all possible despatch; the ground, therefore, should be well trenched, and planted with sycamore, poplar, larch, spruce, and balm of Gilead firs, which are our fastest growing trees, and therefore should have the preference; taking care, at the same time, to intermix a sufficient number of oak, beech, elm, and chestnut, to remain after some of the others have been thinned out or have attained too great a height. It is a rule that there should never be any trees of any height on the south side of a garden for a very considerable distance, for, during winter and early in the spring, they fling their lengthened shadows into the garden at a time when every sun-beam is valuable; on the east, also, they should be sufficiently removed, to admit the early morning rays. The advantage of these precautions is conspicuous in the early spring months, when hoar-frost often rests on the tender buds and flowers, which if it be gradually dissolved, no harm ensues, but if the blossom be all at once exposed to the powerful rays of the advancing sun, when he overtops the trees, the sudden transition from cold to heat often proves destructive. On the west, and particularly on the north, trees may approach nearer; perhaps within less than a hundred feet, and be more crowded, as it is from those points that the coldest and most violent winds assail us.

All the plantations round a garden, intended either for shelter or for blinds, should be composed of evergreens, thickly planted, preferring those which have been reared from seed to those, which have been propagated either by cuttings or layers, as being more likely to assume the habit of trees; as they grow up, clear away the deciduous trees from them, this will afford a shelter in winter and spring, when it is most wanted, and which will not be so well effected, if deciduous trees alone be planted. It must be further observed, that if only a sufficient number of deciduous trees be left, the whole will in time have a good effect.

SITUATION AS REGARDS ALTITUDE.

Under this head it must be remarked, that the situation should not be too high nor yet too low; if too high, it exposes the crops too much to the cutting winds; if too low, it is seldom sufficiently dry at bottom, and there is a natural sourness in low situations which is not easily eradicated by draining or by any other means. Low situations are objected to by Dr. Darwin in his Phytologiæ: "The great warmth of low situations," he says, "and their being generally better sheltered from the cold north-east winds, and the boisterous south-west winds, are agreeable circumstances, as the north-east winds in this climate are the freezing winds, and the south-west ones, being the most violent, are liable much to injure standard fruit-trees in summer, by dashing their branches against each other and thereby bruising or beating off their fruit; but in low situations, the fogs, in vernal evenings, by moistening the young shoots of trees and their early flowers, render them much more liable to the injuries of the frosty nights which succeed them, and which they escape in higher situations." Professor Bradley gives a decisive fact in support of this principle. A friend of his had two gardens, one not many feet above the other, but so different, that the lower garden appeared flooded with the evening mists, when none appeared in the upper; and, in a letter to Professor Bradley, he complains that his lower garden is much injured by the vernal frosts, while his upper one remained uninjured.

SITUATION AS REGARDS ASPECT.

A good aspect for a garden is allowed to be that, which has a gentle declivity towards the south, and inclining rather towards the east, in order that it may receive the benefit of the morning sun; but this inclination should be as slight as possible, or else it will give the garden an awkward appearance. The inclination, however, may be only towards the south, and that not exceeding one foot in twenty, if artificially made, but if the ground have naturally a greater or a less inclination, provided that it be not inconveniently steep, there can be little reason for altering it; ground, which has a considerable slope towards the south is always the warmest; a flat or level surface is not desirable, it will be cold and present a heavy and dull appearance.

A north aspect is to be avoided for general purposes, it being always cold and late. It must, however, be admitted that such an aspect has its advantages in summer, by retarding many crops which otherwise would be brought to seed before they had acquired a sufficient size for the kitchen. Salads, spinach, and cauliflower, are brought to perfection in northern aspects, when they would make little progress, if exposed to the full powers of the sun. In such situations, peas, and many other vegetables, yield superior crops during the hot summer months, particularly in dry seasons. In large gardens it would, therefore, be advisable to have a piece of ground enclosed for those particular purposes, as the prolongation of the season of most vegetables and small fruits is very desirable; the size of such a piece of ground might be in the proportion of one-fifth or one-sixth of the size of the whole garden.

Gardens of great fertility and earliness are often to be met with on the sides or near the bottom of hills, particularly if sheltered from the colder points by lofty rocks, the reflection or concentration of the rays of heat from them rendering the situation peculiarly adapted for bringing crops of the most delicate kinds to perfection at an early season. Situations of this kind are not only desirable on account of these advantages, but they are generally very romantic and picturesque, or they may be rendered so by a judicious mode of decoration.

SITUATION AS REGARDS SOILS.

Having expatiated on the necessity and advantage of shelter, our next object, and one not less important, is a good soil. Where the soil is naturally good, it is generally much better, for the majority of purposes, than any that can be made by artificial means, and ultimately must prove a great saving of expense. The soil, if not very bad, is more easily and readily improved, or even entirely made to suit the dispositions of the various crops to be reared, than it is to provide sufficient shelter by artificial means, and is sooner accomplished even on a large and extensive scale. Of whatever description the soil may be, it is absolutely necessary that it should be completely drained, as the basis on which all the future improvement of it is to be effected. If wet, strong, and clayey, draining is of still greater importance; if light, and even dry and sandy, drains should also be introduced at the first formation of the garden, as this operation cannot be either so effectually nor yet so conveniently done at any subsequent period. In the first instance, it is necessary to drain well to carry off the stagnant water, with which the sub-soil may be overcharged; and in the second, to provide against a superfluity of water from heavy rains or other causes. The drains should be so contrived that they may be brought to discharge their contents in larger channels under the walks, and these again should discharge themselves beyond the garden boundary.

All gardeners agree that the soil best calculated for general garden purposes should be of rather a light, rich, friable, loamy texture, dry, mellow, and capable of being wrought at all seasons, and of a good depth, that is, from two feet to three feet and a half; and that the worst kinds are those of the very light sandy, and stiff clayey texture. A loam of a middling texture, rather inclining to sand, will be found the most suitable for the majority of kitchen vegetables; the greater part of which seem to delight in those soils, which are the easiest wrought at most seasons of the year; there are some soils, that have the faculty of producing more early than others, and they are such as are commonly called black sands, in which is found an equal temper between dry and moist, accompanied with a good exposure, and with an almost inexhaustible fertility, rendering them easy to be dug by the spade, and to be penetrated by the rain waters; neither are they so apt to crack in severe droughts like strong clayey soils, nor be parched with heat like sandy ones, nor in hard frosts are the roots of plants and seeds so apt to be thrown out of them as in some others. If the soil be too strong, the roots of plants push weakly into it, and are apt to canker and perish; if too light, and at the same time poor, the roots of vegetables will wander far in search of nourishment, and be unable to collect a sufficient quantity for their support and maintenance. To attain perfection on this head, our aim should be to make choice of a proper natural soil at first, or to compose an artificial one as near as possible to that above described. It is a false principle to depend upon manures entirely, for were they to be had in the greatest abundance, a too free application of them would have effects highly injurious to the quality of vegetables in general. In the formation of a garden, a moderate and prudent expense should be bestowed at the beginning, if the undertaking is to be ultimately crowned with success and satisfaction. It would be desirable to have a variety of soils in every garden, but this is seldom to be met with naturally, and few are at the expense of constructing them artificially, as most of the vegetables cultivated in our gardens seem to accommodate themselves to the soil of which they are formed.

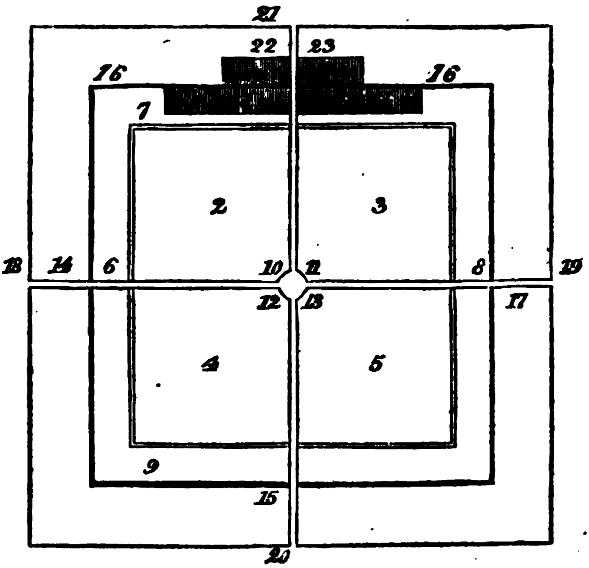
SIZE AND EXTENT OF THE CULINARY GARDEN.

The size or extent of garden-ground, like that of its distance from the mansion, must in some measure depend on the taste of the owner, his style of living, number of his family, &c. It is, however, always better to have too much, rather than too little space, for there is nothing preposterous in a small house having a large garden. Marshall, in his Introduction to Gardening, observes, "some families use few, others many vegetables, and it makes a great difference whether the owner be curious to have a long season of the same production, or is content to have a supply only at the more common times. But to give some rules for the quantity of ground to be laid out, a family of four persons (exclusive of servants) should have a rood of good-working open ground, and so in proportion." This, however, is only applicable to families of retired trades-people, and gentlemen of small fortune, who are not supposed to indulge in all the luxuries of the table, like families of rank and fashion. Few country-seats have less than one acre, and some exceed twelve, in constant and regular cultivation; as kitchen-garden from one acre and a half to five or six acres may be considered as the common quantity enclosed by walls, and the latter size, if properly managed, will be found to afford sufficient vegetables for a family of the first class; as many vegetables, such as potatos, turnips, carrots, and some others, are found to be much better in quality when cultivated in the open fields; if the owner be attached to agriculture, or farms a piece of ground, it will be found very beneficial to grow a supply of those vegetables in the fields. The vegetables thus produced, will be found to be of a higher flavor than those which are reared in the garden by force of manure, and will present an opportunity of renewing the quarters of the garden by fallowing, or giving them rest, in succession. Many gardens are to be met with of greater extent, but it is to be questioned whether, under better management, much less ground would not answer every demand of the kitchen. Nothing can have a more unsightly appearance than a large garden not half cropped, and which is not kept in a neat and respectable order; nor does any thing give a garden more the appearance of neglect, than to see a part of it converted into a nursery for rearing forest-trees; it would be far better, where the ground is not wanted for a time, to lay a part down in grass, which will tend to renovate the soil, and leave it in a condition to be cropped to advantage when necessary, whereas the rearing of forest-trees exhausts the ground, and leaves it after a time so impoverished, as to be unfit for the production of its proper crops.

FORM AND ARRANGEMENT.

Various forms have been recommended by practical men, particularly for that part of the culinary garden which is surrounded by walls. Some have recommended a square figure. (*Fig.* 1.)

Fig. 1.



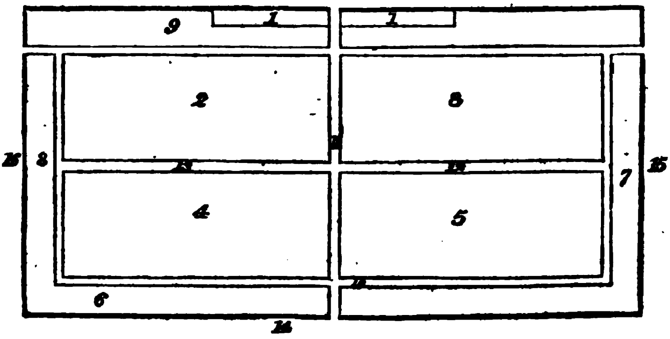
1. 1. *Hot-houses.* 2. 3. 4. 5. *Quarters.* 6. 7. 8. 9. *Borders.* 10. 11. 12. 13. *Walks.* 14. 15. 16. 17. *Walls.* 18. 19. 20. 21. *Outer Boundary.* 22. 23. *Back Sheds.*

Abercrombie recommended an oblong, with the angles cut off, to give a greater portion of the walls behind an equal degree of aspect with those on the garden side. Hitt recommended a geometrical square or rhomboid, so placed that each wall might derive as much benefit from the sun as possible.

M'Phail recommended a square or oblong figure, as the most convenient; and Nicol designed many excellent gardens, formed of squares or parallelograms, with circular projections on the north side. Irregular figures cannot be objected to, as they generally afford a great variety of aspects, and may be justified, if their form be in keeping with the natural surface of the ground, independently of which they are more easily concealed from the other parts of the domain, and even if they be seen, they have not so stiff and formal an appearance as a geometrical figure. They are, however, liable to many objections; if on a small scale, the internal subdivision of them into quarters always ends in too many acute angles, and renders the cropping of them more troublesome. Upon a great scale, however, a considerable degree of taste may be displayed in their internal subdivision, and, if well managed, may be productive of a good effect. The surrounding boundaries of plantation may be rendered much more picturesque, and can be made to harmonize better with the other grounds, than those that shelter more formal figures. Oval and circular figures are liable to the same objection, of being more troublesome to crop.

The form most generally adopted, and by far the most rational, is that of a lengthened square or parallelogram, whose greatest length runs from east to west. (*Fig.* 2.)

Fig. 2.



1. 1. *Hot-houses.* 2. 3. 4. 5. *Quarters.* 6. 7. 8. 9. *Borders.* 10. 11. 12. 13. *Walks.*
14. 15. 16. *Walls.*

Such a figure is more conveniently divided into quarters, and those quarters will always present a neat and compact appearance. A form of this shape will produce the greatest extent of south wall, which is a matter of no trivial importance; for, without the aid of these southern walls, few of the finer fruits will arrive at perfection, even in our most favorable situations. The outer fence or boundary need not be exactly parallel to the walls, as circumstances may so combine as to render that disposition unnecessary. The slips or surrounding piece of ground may be cropped with coarse vegetables, and probably planted with fruit-trees and bushes, or, in many cases, be entirely occupied as an orchard; the form, therefore, of the outer boundary need not be confined to any particular figure. A square, like an entirely level surface, will always have a stiff and heavy appearance; but this objection may, in a great degree, be remedied, by running a wall across from east to west, and thus dividing the space into two equal, or unequal pieces. This plan is often adopted, to increase the extent of walls for the production of our finer fruits.

The arrangement of such a figure is simply to carry walks parallel to the walls round the interior of the garden, leaving borders for the cultivation of fruit-trees of sufficient breadth, and bearing a just proportion to the height of the walls. The breadth of these borders is generally allowed to be equal to the height of the walls, for, if narrower, they do not admit of sufficient scope for the roots of the trees to run in, and it gives the walls the appearance of being higher than what they really are. If much broader, they diminish the effect of the walls; and where they are not cropped with vegetables, from an idea that they injure the fruit-trees, a great loss of ground must be the inevitable consequence. A walk should divide the whole garden into two equal pieces from north to south, unless the extent exceed an acre, in which case, two or more walks will be necessary, as also one from east to west, intersecting each other in the centre of the space, and thus dividing the whole into four equal quarters, the sides of each quarter being exactly parallel to the walls. If the extent be more than one acre, it will be advisable to divide it into six compartments, for the greater facility of cropping the whole. In the arrangement of other figures, it is necessary, likewise, to have the fruit-tree borders divided from the rest by a walk running parallel with the walls, and the remaining space divided in the most equal manner possible. The walks should be separated from the larger compartments or quarters by a marginal border, from four to six feet wide, in which an espalier rail is often fixed, for the purpose of training apple and pear trees, at the distance of three to five feet from the walk; or, instead of espaliers, dwarf standard trees may be planted, according to the taste of the owner. An alley or path, commonly two feet broad, separates this border from the quarters, and is to be used by the labourers while engaged in the several operations of gardening.

WALKS.

Marshall observes, in his Introduction, "that the number and breadth of walks must, in a great measure, be regulated by the quantity of allotted ground, exceeding in those particulars, where there is room; but that few and wide walks are preferable to many contracted ones. If the garden be small, one good walk all round is sufficient; and, if long and narrow, the cross ones should not be many; six or eight-feet walks are not too wide for a moderate-sized garden." In the formation of the walks, the ground, if good, should be excavated to the depth of two or three feet, and disposed upon the compartments, in order to admit of a sufficient depth for a layer of stones, brick-bats, rubbish, or rough gravel, &c., to render the whole perfectly dry at all seasons, as well as to prevent the rising up of the worms. Under the walks, as has been already noticed, good drains should be formed to carry off all superfluous water. The bottom being thus prepared, the lower stratum being laid as hollow as possible, the whole should be finished with the best gravel that can be procured, from six to twelve inches in depth: that of a binding nature is the best. The colour should be of a yellowish hue, as dark coloured gravel, although it may be equally good for rendering a walk dry, firm, and hard, has not so cheerful an appearance; lighter coloured gravels are also sooner tarnished, and unless exceedingly well kept, soon look ill. Few places are so well supplied with excellent gravel as the neighbourhood of London; that from Kensington is supposed the best, and there are frequent instances of its being exported to Scotland for garden-walks. The advantage of good gravel, for the embellishment of a garden, is of much importance, but there are many situations, where this article is not to be procured, unless at an enormous expense. Recourse, therefore, must be had to substitutes, and there are several, which will make excellent walks, equally comfortable and agreeable as gravel, but which fall far short of it in point of beauty.

Of these substitutes, coal ashes are the best, and for kitchen-garden walks may answer the desired purpose. In those situations, where utility and comfort are the only objects, ashes, when sifted and laid upon any bottom, whether prepared or not, by being rendered dry, make excellent walks; they are not much affected by rain, neither are they apt to be disturbed by frosts, nor subject to be overgrown with weeds; but should the latter be the case, they are easily cleared of them.

Road-sand is also a good substitute for gravel, and that which is procured from roads formed of flints is the best. The walks may be rendered dry before it is put on, in the same manner as gravel, which will prevent the effects of worm casts, to which walks of sand are very subject. It should be laid on in a wet state approaching to mortar, and, when partially dry, rolled down. Walks of this sort are easily kept clear of weeds, and during summer, are neat and clean. In autumn, and during the frosts and thaws of winter, they become soft and unpleasant, and are apt to get overgrown with various species of mosses and conferva.

Saw-dust makes a dry walk, where it can be had in abundance: it is dry and clean, few weeds will make their appearance in such walks, but it is a material which requires often to be renewed.

In Holland, where gravel is very scarce, many of the best gardens have their walks formed of bog-mould; but it is liable to many defects, and is neither dry nor clean.

Small pebbles, imbedded in strong clay, when placed closely together like a causeway, make an excellent, dry and clean walk, and present a neat appearance; but this, if well done, becomes expensive, and cannot be carried to a great extent with a due regard to economy.

Whether gravel or any of these substitutes be used, it is necessary to have an edging of some sort or another; that of box is certainly to be preferred, as being the neatest and requiring the least trouble in the management of it. Thrift, (*Statice armeria,*) is often used, and will last for a couple of years, but it requires to be replanted so often, that it cannot be recommended. Various other sorts of edging, such as bricks placed on edge, slates, deal, &c., are used, but are all objectionable. Grass edgings are sometimes laid, but they require to be often mowed, and at best have an unseemly appearance.

In gardens of small extent, edgings are sometimes formed of useful kinds of vegetables, such as parsley, strawberries, thyme, hyssop, winter savory, or chamomile; these, while they remain young and ungathered, have an effect not out of character with the kitchen-garden. There are some persons who dispense with all sorts of edgings, and merely defend the edges of the walks with a beaten border, which they renew as occasion may require.

WALLS.

Walls are constructed of various materials, such as brick, stone, wood, mud, or flints. The chief use of walls is for the production of fruits, which will not arrive at an equal degree of perfection on espaliers or standard-trees. They are also of use to surround the kitchen-garden, for the better exclusion of hares and rabbits, which cannot be kept out by any other fence. They also afford a considerable degree of shelter, and, by the reflection of the rays of heat on the borders, render them better calculated for the production of tender vegetables at a season earlier than they would be produced in the open quarters of the garden.

Many good kitchen-gardens, however, considered merely as such, are wholly destitute of walls. Fences of various materials and constructions have been used in former times, and instances occur, in our own day, of very good gardens being enclosed by hedges, paling, and other sorts of fences.

The late Walter Nicol, who had a much greater experience in the formation of gardens, than any other practical author on the subject, gives the following directions on this head: "In designing and laying out a modern garden, a degree of taste, as well as fitness or propriety, ought to be displayed, the basis of which is the right placing, proportioning, and constructing of the walls. If these be properly set down, so as to answer the east of the ground, and be raised to proper heights according to its extent, the rest is easy, and follows as a matter of course."

"In this particular branch of gardening, utility and simplicity ought to go hand in hand, otherwise a display of genuine taste will be wanting. It is not in curves, circles, nor ogees, that, in this instance, we derive any satisfaction. The direction of the walls, if the ground will admit of it, should always be in a direct line. They may be built perpendicularly, or they may be inclined so as to suit the general cast of the ground; but the nearer they approach the perpendicular, the greater pleasure will they afford. The eye is distracted, and the mind is impressed with fear, in beholding any building apparently insecure. We can look on a mast placed obliquely, or a tree glowing aslant, with firmness and satisfaction, because we know the one is supported by ropes, and the other by roots, but we look with a degree of distrust and of fear on a wall running much off the perpendicular."

After stating the necessary choice of the ground as regards situation and shelter, which we have already treated on, Mr. Nicol proceeds to recommend, that if "the north wall can be placed quite level, and also the south wall, on a lower level, and so, as that the east and west walls shall fall from north to south a foot in thirty, or in twenty-five, or according to the slope of the ground; and if the ground be lengthened from east to west, in the proportion of three to two, the extent being two or three acres, on such a spot may be erected a garden that will not fail to please."

If the surface of the ground be of an unequal height, the walls should be so also, and probably the best rule that can be laid down, is to build the walls in such a manner that their coping may be parallel to the ground surface, provided that it be not very much distorted; in that case, it will always be better to regulate the surface to a somewhat regular shape.

Where the ground is a dead level, it will be necessary to have the walls of different heights to give relief, otherwise the whole will have a heavy and dead appearance. The height of the walls should be regulated according to the size of the ground inclosed, as well as to the sorts of trees intended to be placed against them. In small gardens, the walls should be rather low than otherwise, for a small garden surrounded by high walls has a gloomy and heavy appearance; this objection, however, may be obviated, by having them of different heights, always making the north wall the highest, and the south the lowest. The principal walls of gardens of any considerable extent are seldom below ten feet, and seldom exceed sixteen. For gardens of ordinary dimensions, we should consider from ten to twelve feet to be a good height, thus making the north wall twelve, and the south one ten. However, the height of the north wall must be in general regulated by the height and width of the hot-houses, which may be placed against it; and under such circumstances, if the height be more than twelve feet, the effect will not be unpleasant, as the houses will bear a proper proportion to it. Hot-houses are required of different heights, in order to suit the purposes for which they may be intended; and this necessary inequality of height will tend to relieve the height of the walls; and still farther to accomplish that end, it would be advisable to have the highest part of the wall in the middle, and the breaks gradually declining to each end. "In a garden of an acre, being a parallelogram of the best proportion, and of a gentle declivity," Nicol observes, "the north wall may be raised to the height of fourteen feet, the east and west walls to twelve, and the south wall to ten, above the ground level. If the ground slope considerably, the breakings in the respective heights of the walls may be less; they may be only a foot, and the relief will be the same, or nearly the same, to the eye, in ranging along their surfaces. In gardens of greater extent, the walls may be raised to a greater height, but by no means in proportion, if it extend to several acres. The extreme height of the north wall, in any garden, should not exceed eighteen feet; and on the supposition that it contains four acres, the east and west walls should be fifteen, and the south wall only twelve feet high, in order that it may give the necessary relief to the eye. In a garden four hundred feet long, and three hundred feet broad, which forms a handsome parallelogram, and contains something above two English acres, if the ground lie on an easy slope, a very eligible height for the north wall is sixteen feet, for the east and west walls fourteen, and for the south wall twelve. But if the ground be quite level, or nearly so, the north wall being the same height, the east and west walls should be thirteen and a half feet, and the south wall eleven feet in height, or the east and west walls may be only thirteen, and the south wall ten feet high, if it be a dead level."

Many persons are, however, content with walls of more humble dimensions, and where the production of fruit only is the consideration, no doubt can exist, but that lower walls answer the purpose equally well, and in all cases will produce an equal, if not a greater, quantity of fruit, in proportion to their respective surfaces. Where economy is a consideration, low walls, of six or eight feet in height, are to be preferred to those which are from ten to eighteen. The generality of trees will thrive well on such walls, and some kinds are supposed to flourish better. The peach-growers on the continent prefer low walls; and that practice has been, in some cases, adopted in this country with complete success.

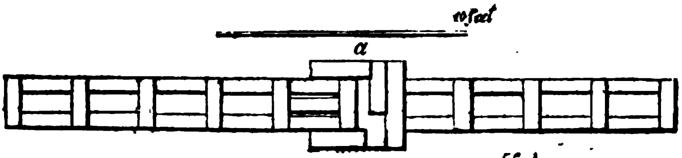
Walls are generally built perpendicularly, or nearly so, and are found to answer the purposes for which they are intended, provided that the operative department be well managed; we cannot, therefore, divine what benefit is to be gained by deviating from this practice; although several authors have recommended sloping walls, that is, building them so as to present an inclined surface to the horizon, from an idea that the sun acts with more vigor upon such walls than upon perpendicular ones.

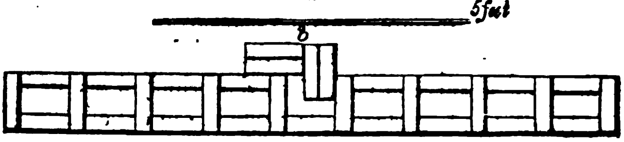
A great variety of walls has been offered to the public, and highly rated by the inventors, as a matter of course. In these pretended improvements, we see not the least possible advantage over perpendicular and straight walls; on the contrary, we observe many disadvantages attending them, particularly in the expense of their construction, and in their total want of beauty. Amongst these are the waving or serpentine wall, the angular wall, the zig-zag wall, the square fret wall, the pier'd wall, and walls with arched niches or recesses, all of which are inferior in beauty and utility to the straight wall in common use.

Hollow walls have been recommended, as possessing the same strength, without the same number of bricks being used in the construction of them; this is in itself important, and such walls are capable of being heated by artificial means, as the occasion may require, for the purpose of ripening late fruit, but more especially for ripening the young shoots, which is still more important, and is, in fact, the principal use of hollow or flued walls, and, when fuel is moderate in expense, is found to be extremely useful. But the success in this case, as in many others, depends upon the judgement and assiduity of the gardener.

The cellular wall is a recent invention, the essential part of the construction of which is, that the wall is built hollow, or at least with communicating vacuities, equally distributed from the surface of the ground to the coping. If the height do not exceed 10 or 12 feet, these walls may be formed of bricks set on edge, each course or layer consisting of an alternate series of two bricks set edgeways, and one set across, forming a thickness of nine inches, and a series of cells, nine inches in the length of the wall, by three inches broad. The second course being laid in the same way, but the bricks alternating or breaking joint with the first. The advantages of this wall are obviously considerable in the saving of material, and in the simple and efficacious mode of heating; but the bricks and mortar must be of the best quality. This wall has been tried in several places near Chichester, and at Twickenham, by F. G. Carmichael, and found to succeed perfectly as a hot-wall, and at 10 feet high to be sufficiently strong as a common garden-wall, with a saving of one brick in three. As a whole, indeed, it is stronger than a solid nine-inch wall, on the same principle that a hollow tube is less flexible than a solid one.

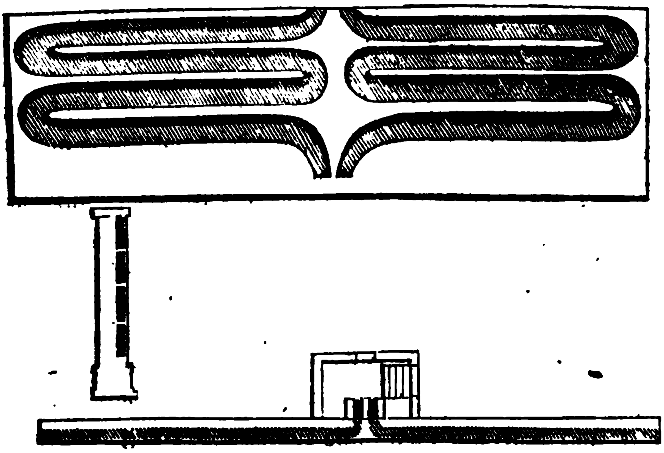
It is evident, that the same general plan might be adopted in forming cellular walls of greater height, by increasing their width. A very high wall might have two systems of cells divided vertically, one or both of which might be heated at pleasure. Piers may be formed either on both sides of the wall (*a*), or on one side by bricks on edge (*b*), so as to bond in with the rest of the work.





A great advantage may be derived from walls built so as to be heated as the occasion may require; these are denominated hot walls, and have hitherto been constructed by introducing a system of common smoke-flues (as *fig.* 1) distributed through

Fig. 1.



the wall at certain distances. These flues are objectional, merely as they require frequently to be swept, which is not very readily effected; independently of which, they are, like all flues heated by hot air or smoke, liable to become cool soon after the fire ceases to burn. An improvement has been designed by W. Atkinson, Esq., of Grove End, and for its utility and simplicity deserves to be in more general use; it consists in building the walls hollow, which will be found far more economical and equally strong, and introducing, within a few inches of the bottom of such cavity, hot-water pipes, supplied from boilers, which may be built in the wall, and the fire fed and managed from behind, such boilers being placed at the distance of from fifty to one hundred feet apart; or one boiler, placed in the middle, will heat one hundred feet or more of wall sufficiently, by having the pipes branching both from the right and left, a space much greater than could by any other means be heated by one fire. These pipes require no cleaning nor repair, if once properly placed, and can be erected at a very moderate expense; they possess a decided advantage over hot air or smoke flues, by continuing to give out heat to the wall long after the fire has ceased to burn, and this property will increase according to the size of the pipes that may be introduced. For the side walls, which have an eastern and western aspect, the pipes may be placed in the centre of the walls, so that both sides may derive an equal degree of heat from them, as *fig. 2*; and for walls having only a southern aspect, the walls being thicker, the pipes may be so arranged as to have only one brick of thickness in front, and the remainder of the thickness on that side where the heat is not required (*fig. 3*). The water being heated in the boiler will flow along one pipe to its extreme point, say one hundred feet, and there make a turn by an elbow joint, and

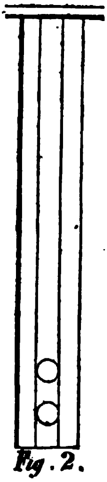


Fig. 2.

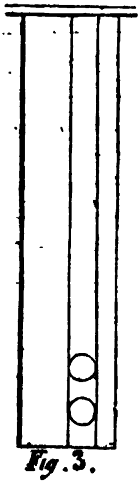
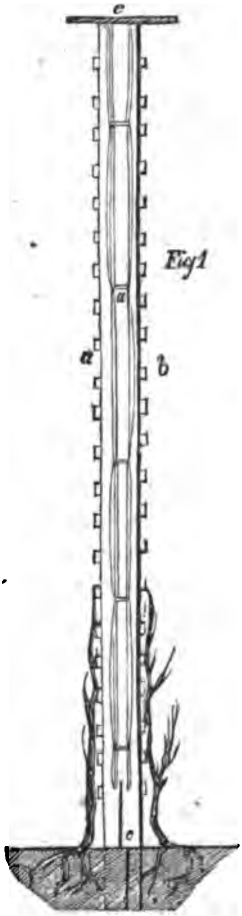


Fig. 3.

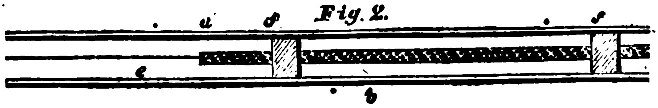
return to the boiler by a pipe immediately below it, which will enter the boiler near its bottom. The water in this lower pipe will travel with more rapidity by forming an inclined plane from the extremity to the boiler; the top pipe may be perfectly level. Thus the water will continue to circulate in the pipes long after the fire is extinguished, or, indeed, as long as any heat remains in the boiler or brick work round it. It has been ascertained that water heated by this means will travel at the rate of forty feet per minute, with an ordinary fire, but this rate may be much increased. The distribution of heat by this mode is so equal, that the pipes will be found as warm fifty or sixty feet from the boiler, as they are where they are connected to it. This is never the case with smoke flues; from which arises the many complaints that hot walls are burnt up in one part, and little affected by the heat in others. (For a more full account of this mode of heating, see the FORCING GARDEN).

Sunk walls, or such as are built under the general surface of the ground, or nearly so, and are known by the names of haha's, or sunk fences, have not been often adopted for general purposes. Instances occur, however, of the adoption of these walls, where it has become necessary to conceal them from the sight. These walls have many advantages, and might be much more generally adopted than they are; they, however, possess this disadvantage, that they present only one surface for the purpose of planting trees against; but, to balance this defect, they are much stronger, are not liable to be blown down, and from the rays of heat being reflected from them to the opposite bank, and again reflected upon the wall, together with their being completely sheltered from cutting winds, renders them extremely well calculated for the production of early fruits; in addition to which, a garden enclosed with sunken walls may be rendered more picturesque than one with lofty walls, which, in confined places, are often difficult to hide. In our practice, we once had a sufficient proof of their superiority as regards the production of early crops. In the management of such walls, the trees may either be planted in the bank and bent into the wall, or, in many cases, they may, with greater propriety, be planted behind and trained downward. The expense of constructing such walls will not be so great as might at first sight be imagined; the ground need not be excavated to more than the depth of half the height of the wall, the soil removed being placed upon the top of the original surface, will give the depth required. In situations naturally damp, such a mode of enclosing a garden will tend materially to render it dry.



Reed-walls and screens are used by Mr. Nieman, gardener at Hylands, near Chelmsford, the seat of P. C. Labouchere, Esq. What is called a reed wall (*fig.* 1 & 2,) may be described as 10 feet high, and consisting of a double trellis, *a b*, composed of horizontal laths about eight inches apart, a coping board nine inches broad; the reeds placed endways within the trellis, *d*, and supported about a foot from the ground to keep them from rotting; the interval of a foot being filled up with slates placed on edge, *e*; the trellis rods are nailed to posts, (*fig.* 2, *f*,) and, by taking off a few of these rods on one side, the reed-mats can be taken out and renewed. Russian mats would, no doubt, answer well, and last a long time, and they might be taken out with still less trouble. Straw mats would also do, where reeds could not be got; and heath, as being of a dark color and very durable, would make the best of all structures of this kind. Mr. Nieman finds that

Fig. 2.



peaches, grapes, and other fruits, ripen just as well on these structures as on brick walls.

The trellis against reed walls should consist of horizontal wires, rods, or laths, when vines, currants, or trees, are to be trained vertically; and of vertical wires or rods when trees are to be trained in the fan or in the horizontal manner.

The common brick walls of the garden at Hylands are, for the most part, trellised, Mr. Nieman considering the trees less liable to injury from extreme heat, and the fruit likely to be better flavored, when the branches are kept a few inches from the wall, and the fruit in consequence surrounded by a free circulation of air.

The thickness of walls must depend principally upon their height and situation, whether sufficiently sheltered or not. Few walls exceeding eight or ten feet in height can be sufficiently strong, if less than fourteen inches in thickness, if made of brick; but, if made of stone, they must be rather thicker. It is better to build them of a sufficient thickness, in order to render them secure, than to erect them of a smaller dimension and have recourse to piers to support them; for, notwithstanding the benefit of such supports, they have an unseemly effect, and are very inconvenient for the operation of training. In those cases, where these supports are necessary, it is better to construct them so as to project from the north side of principal walls, on account of their being less exposed to the sight. No objection can exist to such projections, when the doors are cut through the walls, for a greater thickness of wall at such places will give strength to them, and if performed with judgement, the effect rather than being prejudicial may be ornamental. It is of material consequence, that the foundations be good, and that they should be constructed of greater thickness to within a few inches of the ground level, so as to afford a sufficient base for the wall to stand upon; as, from the nature of the ground, and the subsequent operations to be performed on them, they may naturally settle or be disturbed, and in such cases, the consequences might be attended with serious inconvenience.

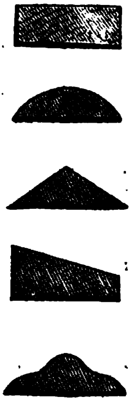
The materials of which walls are composed are as various as the heights to which they should be carried. Bricks are generally allowed to be the best, forming by far the neatest wall, and from their nature are much warmer than stone, wood, or clay, independently of which, they possess the advantage over stone walls, as being better calculated for the training of the trees. Some authors have gone so far as to say, that where bricks cannot be procured, it is better to dispense with walls altogether; but against this opinion, we enter our most decided caveat, for many excellent walls are made of stone, mud, and wood, which have been found to produce the most luxuriant crops of fruit. In those places, where bricks are scarce, the walls may be built of stone, and faced with brick, and in such cases, they are as good as those built entirely of brick: walls of this description are often met with in Scotland, and in many parts of England, where stone is abundant. Stone walls, if well built, are more durable than brick ones, particularly those, which are built of stones dressed to regular sizes and laid in courses. Mud walls are used in many places where both bricks and stones are scarce, and for low walls they are found to produce the desired effect; these walls, however, require to be secured by thatch, or broad projecting copings, in order to render them dry, or else the expansion occasioned by frost would soon reduce them to ruin. These copings, although offensive to the eye, are nevertheless of considerable benefit to the trees in the vernal months, while the blossoms are forming, and also during their expansion, by protecting them from the effects of vertical frosts; and their use is also obvious while the fruit is in a state of maturity, by preventing heavy rains from injuring their flavor. In the management of the trees upon such walls, the use of the garden-engine should be freely exercised, as the trees are excluded from the benefit of the dews, and also from a due portion of natural moisture from summer showers. Portable copings are useful in granting that necessary protection, as will be demonstrated in the sequel.

Flint walls, although neither neat nor well calculated for training, are nevertheless often used in chalky countries, and fruits are found to ripen upon them very early. The first wall-fruits brought to Winchester market are from trees planted on the ruins of the old city walls, which are chiefly composed of flints.

Wooden walls have long been in use, but although fruits are produced upon them in the greatest perfection, they are much less durable than those of brick or stone. In order to render them more permanent, they should be composed of the best timber, particularly the uprights, to which the boarding is fastened, and that part which is let into the ground should be charred, as well as a certain portion above the surface, as at that particular spot they are the most liable to decay. Iron uprights might be substituted, but in their use, an almost insuperable difficulty would present itself in attaching the boarding to them. Wooden walls should be either well covered with some durable paint, or with the composition called *coal-tar*. The latter, however, has a disagreeable smell for a long time after its application; and such walls will always have a sombre and repulsive appearance. The boards of them should be placed in an imbricated manner, and for this purpose they should be cut with a thick edge on one side, and a thin one on the other, such as is technically called weather-boarding. If the boarding be thick, it would be advisable to join them as closely as possible; and, in order to prevent the air passing through the joints, which will open considerably, however well seasoned they may be, nail thin strips of deal to cover each joint. These may be placed on the back of the wall, and will not be so much exposed to view. Wooden walls are expensive, and although they may be useful for nurserymen, for the purpose of training young trees upon, they cannot be recommended as advantageous or elegant in a well-disposed garden.

Garden-walls, however constructed, or of whatever materials they may be made, require as much care in having them well furnished with a coping, as it does to furnish a house with a roof, and also on the same grounds, of keeping them dry and wholesome. All buildings are found to last a greater length of time when properly secured from wet, and as garden-walls are exposed to all the vicissitudes of the weather, it is of importance that they be furnished with a coping sufficient to throw off the rain that may fall upon their upper surface. It has been a question much agitated amongst horticulturists, whether the projection of the copings should be large or small, or whether they should project at all. It is obvious that they should project over the wall sufficiently to throw off the rain; but that they should project considerably, is still a matter of question. If the coping project over the wall more than from two to three inches, it will give the wall a heavy appearance, and therefore we would recommend that the projection of the fixed or permanent coping should not exceed those dimensions, and they will be found, in every respect, sufficiently large to guard the walls from the effects of wet. Copings of greater breadth are, however, useful at certain seasons, namely, when the buds are breaking, and while the blossom is expanded, as they answer the purpose of guarding them against the effects of perpendicular frosts, which would be highly injurious to them at that critical period. We would recommend portable or moveable copings of boards, supported on brackets of iron, either built into the wall, or driven in afterwards, and these brackets should be perforated with holes, in order to admit of the boards being fastened down to them. The breadth of such copings will vary according to the height of the wall, the low ones not requiring such broad copings as those that are more lofty. If the boards be twelve or fifteen inches broad, they will be found sufficient for the purpose required. As soon as the fruit is fully set, these boards may be removed and stored away in a dry place, where they may remain until wanted the following spring. It is only while the trees are coming into blossom, and while they remain in that state, that these copings are of use; their removal after that time will be advantageous to the trees, by allowing the dews and rains of summer to fall freely upon them. If the trees be kept dry whil in bloom, the frost will not act so severely on them, upon the principle that all vegetables resist the effects of frost, in proportion to the dryness in which they are kept.

The permanent or fixed coping is intended for the protection of the walls, and should be so constructed as to insure the accomplishment of that end. For this purpose, nothing is so good as stone pavement, it being found of greater lengths than bricks or tiles, and the greater the length of such pieces, the fewer joints will be necessary, which is in itself important. Their durability is also great, and they present a neater appearance to the eye than those of any other material. In those places, where stone is expensive, bricks should be procured of different descriptions, intended for wall copings, and if laid in cement, will last a long time, and render the walls perfectly dry. Some persons consider it a matter of consequence to place the coping in such a manner, that it may throw the rain that falls upon its surface to the worst side of the wall, and others construct it on such a principle, that the rain may fall equally on both sides; but to neither of these cases ought much importance be attached, for the whole rain that falls on the surface of a garden-wall is, considering the time which it is in falling, so trifling, that it cannot injure one side much more than the other; for if both surfaces be planted with trees, they will, in the generality of seasons, absorb all the moisture that falls, without any great inconvenience or injury to the fruit. It is certainly an error to throw all the rain-water to the worst side of the wall, as the injurious effects are thereby increased, particularly in northern aspects, which are of themselves naturally damp. In the generality of cases, an equal division of the water may be considered as the most rational. Bricks of various forms have been used for this purpose, and the greater the thickness of them, the greater will be their weight, consequently they will bind the wall better together, and they will be less liable to be displaced. The edges which project over the walls should be made thinner than the other parts, or else they will have a heavy appearance. The annexed figures represent the different forms of bricks often used for this purpose, and may be procured at any brick-kiln, and in most cases, will be cheaper than stone.



WATER.

Water is so necessary an element in the formation of vegetable bodies, that without it they could not exist. It is of the utmost consequence in a garden, and no one should be without a regular supply. The expense which the market-gardeners in the vicinity of London incur, in providing this element alone, is a sufficient proof of its indispensibility; and the crops, which are reared by the liberal use of it, are strongly corroborative of the justness of the remark. In all well-regulated gardens, water should be supplied in the greatest abundance, and the disposal of it should be so regulated, that it may be conveniently and expeditiously applied to every part. This is an improvement in gardening, which, although long acknowledged, has been apparently little attended to. There is no situation in which water might not be had, and in many, with very little trouble or expense. Mr. John Hay, as a garden architect, has attended more to this important object than any other designer of the present day; and the good effects of his system are exemplified in many gardens laid out by him in different parts of Scotland. The gardens of Lord Roseberry and Viscount Duncan, designed by that artist, are described in the Edinburgh Encyclopedia, art. *Horticulture,* as having water supplied to them from a reservoir, situated on an eminence at a considerable height above the garden walls. Around the whole garden, four inches below the level of the surface of the ground, a groove of between two and three inches in depth has been formed in the walls, to receive a three-quarter inch pipe, for the purpose of conducting the water. Apertures of two feet and a half high, and ten inches wide, and about fifty feet distant from each other, are made in the wall, in which a cock is placed, so that on turning the handle to either side of the wall, the water issues from that side. The nozzles of the cocks have screws on each side, to which a leathern pipe is attached at pleasure, with a brass cock and director; roses, pierced with holes of different sizes, being fitted to the latter. By this contrivance, all the trees, both on the inside and the outside of the wall, can be effectually watered and washed in a very short space of time, and the whole process attended with very little trouble. One man may go over the whole in two hours; at the same time, the borders, and a very considerable part of the compartments, can be watered with the greatest ease, as the occasion may require. The convenience and utility of this plan must, at once, be perceived by every practical horticulturist.

It is almost unnecessary to add, that river, pond, or rain-water, is to be preferred for all purposes of garden culture, to that which is procured from springs or deep wells, unless the water of the latter has been collected into a reservoir freely exposed to the action of the air, by which means it becomes softened, as it is technically called, and more fit to enter into the parts of vegetable economy. When water abounds upon grounds more elevated than the garden, the advantage should not be lost sight of, as, at a moderate expense, a regular and constant supply of water can be brought, either in pipes of lead or earthenware; or, which is still more economical, where circumstances will allow, in an open drain; and, to use the phrase of an antiquated writer on this subject, this will prove *the life and soul of the garden.*

Reservoirs of considerable magnitude have been formed, not only in gardens, but also in their immediate vicinity, sufficiently capacious to contain all the water, which is collected on the hot-houses, and other buildings, attached to the garden. One of the most complete, as well as the most capacious of this description, has been lately formed by Mr. Forrest, at Sion-House, the Duke of Northumberland's, and is constructed entirely of iron. This is, however, a more expensive mode of building reservoirs than many, from prudential motives, would be inclined to adopt; the convenience, nevertheless, of such a reservoir will be the same, with this simple objection, that as it is some feet below the level of the garden, the expense of pumping it up will be considerable. Reservoirs should, in our opinion, be placed at such a height above the surface of the ground, as to admit of the water being dispersed over the whole of the walls in particular, by means of a portable pipe, as recommended by Hay, and adopted by many other horticulturists. Where circumstances will admit of it, partial irrigation will be found extremely useful in gardens, particularly in the height of summer, and during severe droughts. The serious injury effected by the last three dry seasons is strongly corroborative of the truth of the foregoing remark. Strawberries and raspberries, in particular, amongst the fruits; and celery, cauliflower, and several others, among the vegetables, will be considerably improved by this mode of cultivation.

In those places, where water cannot be procured from elevated grounds, the various modes of digging wells, and boring, which is a late improvement of great value, may be resorted to. In the former case, a pony or donkey could be usefully employed in driving an engine capable of raising a sufficiency of water for a large garden; and, by the latter mode, it might be brought to flow to the surface in almost any part of the grounds, provided local circumstances will admit of its adoption. An instance of the great advantages of the former plan presents itself at Manor-House, in the New Forest, where water is brought from a great depth for the supply of the establishment; and, in the latter case, they are exemplified in the gardens of the Horticultural Society, at Chiswick, and in many other places. Ponds and basins for water are not always pleasing in gardens, and when on a large scale, are of an injurious effect. The expense of watering from them is great, and cannot be done without considerable damage to the crops. Portable force-pumps might be used in such cases, but, if employed on a large scale, will be attended with considerable labour and expense. Triangular wooden troughs might be usefully employed, and, if taken proper care of, will last many years. They need not be of large dimensions, three or four inches in depth being amply sufficient; and they may be so placed, as to convey the water to any distance on the surface. If made in convenient lengths, they are easily managed, and the length at the farthest extremity should be perforated with holes, for the more gradual division of the water. As this mode of watering is intended for the surface only, a boy might be employed in directing the course and division of the water. These troughs, when not wanted, should be cleaned and laid by in a dry place.

ENTRANCE TO THE KITCHEN OR CULINARY GARDEN.

The entrance to a park, or mansion, is one of the most striking features of a noble residence, and affords the proprietor or designer the most favourable opportunity of displaying his taste, equally with the architect in the structure and elevation of the house. This has been a subject which has occupied the attention of the landscape-gardener for a long period, and some beautiful specimens are to be met with from the designs of Repton and others; yet it is singular, that so little taste has been displayed in the entrances to gardens in general.

First impressions are often the most forcible, and, for want of a little skill and management in this matter, many of our finest gardens are seen to great disadvantage; the principal entrances to which are made at points, where the general beauties are concealed, or seen only in a very limited and imperfect manner. Nothing is more common than to see the principal walk leading from the mansion to the garden, conducted through the most uninteresting part of the grounds, and in general making its entry from behind. "Nothing can be more unsightly than the view of the high north wall of the garden, with its back shades and chimney-pots from behind, or even getting the first *coup d'œil* of the hot-houses from a point nearly in a parallel line with their front. The effect of many excellent gardens is lost, or marred, for want of attention to this point, or from peculiarity of situation." The principal walk which connects the rest of the grounds to the garden, and by which strangers should be brought to see it, requires some taste in its construction, and should always be made as interesting as possible. The points at which a garden should be entered, should be chosen according to local circumstances, so that the eye may rest on the most prominent objects, such as the hot-houses, &c. For this reason, the entrance should be from the south, south-east, or south-west; and, on leaving the garden, no objection can exist to the walks branching from the opposite points.

THE SITUATION OF THE MELON AND CUCUMBER GROUND.

The melon ground is generally denominated that piece of ground occupied by pits, frames, &c., for the cultivation of melons, cucumbers, young pine-apple plants, and such fruits and vegetables that either require artificial heat for their culture, or their early production before their natural season. The melon ground should be chosen in the most warm, dry, sheltered part attached to the garden, as the operations connected with the culture of that fruit, and other vegetables, under frames, are such, as to render it desirable that the melon ground should be placed near the outside of the garden, for the more readily supplying it with dung, mould, &c., which would be extremely inconvenient if placed within the walls of the garden, independently of the uncleanly effect which it exhibits from the dispersion of the litter, and other unpleasant circumstances inseparably connected with hot-beds. The compost yard, for the preparation of the various sorts of moulds used in the garden, as well as a piece of ground appropriated for rubbish, pea-stakes, fire-wood, &c., should be contiguous to the melon-ground; and, for the appearance of greater neatness and regularity, these places should be divided from each other by walls, or evergreen hedges, which will not only afford shelter, but also conceal all disagreeable and unseemly objects. The site of these grounds should be either behind the garden, or in the slips on the eastern or western sides, preferring those situations, which are exposed to the sun during the short days of winter, and sheltered sufficiently from winds, but not to that extent, as to render them damp or gloomy.

The nearer that the melon-ground is placed to the forcing-houses the better, as the operations in both are intimately connected; and where pits are used, the melon-ground may be rendered a neat appendage to the garden, if kept neat and clear of all superfluous matter; but, where frames and dung-beds are used, the very materials of which they are made, preclude the possibility of absolute neatness; neither is there any particular necessity in the melon-ground for that systematic attention to neatness, which is so indispensable in the other departments of the garden. Were the hot-water system of heating more generally adopted, as applied to the forcing of fruits and vegetables, a very neat melon-ground might be made of well constructed pits, heated only by that means, and at a comparatively less expense than that, which is incurred in ordinary practice. The compost-ground should also be exposed to the full influence of the sun, and be rendered perfectly dry by draining or otherwise. Damp and shaded situations are peculiarly ill-adapted for this purpose, and should be avoided as having a tendency to injure, rather than to improve the various materials brought thither for the purpose of being ameliorated, and fitted for the more delicate fruits and plants.

CHAP. II.

NATURE AND MANAGEMENT OF SOILS.

Experience has taught us that different vegetables and fruits require not only different treatment in their various stages of growth, but also that they stand in need of different soils to bring them to any degree of perfection. This has been partially accounted for in the rationale laid down by Sir Humphry Davy on the necessity of a rotation of crops. It is, however, notwithstanding that doctrine, not always necessary that a different soil should be prepared for every different production of the garden, for such a practice would not only be extravagant but absurd. Nature, in her infinite wisdom, has, among other wise ordinations, provided that soils of different natures are, in many cases, to be found in the same acre; and, if possible, they should not be wanting in the same garden. In those cases, where nature has not been thus bountiful, recourse must be had to art.

" The varieties of soil in any garden," says Nicol, " may be with propriety confined to the following: viz. strong clayey loam and light sandy loam, which are the two grand objects; a composition of one-fourth strong, with three-fourths light, loam; half strong and half light; and one-fourth light and three-fourths strong. These, by a proper treatment, and with the proper application of manures, may be rendered productive of any of the known and commonly cultivated vegetables in the highest degree of perfection."

Soils may be improved by a variety of operations performed on them, independently of their improvement by manures. This is a serious consideration to all cultivators of the earth, but much more so to the gardener than to the farmer; and for this important reason, that it exonerates his productions from the charge of being either unwholesome or ill tasted, on account of the pabulum, or food from which they derive their support. Thus, vegetables grown in the open fields, where we are to suppose the land less glutted with manures, is by the majority of people preferred to those, which are grown in highly manured gardens. Hence the necessity is obvious, of improving the soil by other operations than that of yearly gorging it with more manure, than is actually necessary for bringing to perfection such vegetables, as are expected to be produced.

The first and principal effort towards the improvement of soils is to be performed by the operation of pulverization, which is effected by trenching, digging, and ridging; the main object of which is, to give scope for the roots of vegetables to penetrate in every direction to which they may be disposed in search of nourishment, as well as to prevent the free circulation of both air and water from being impeded. The mechanical division of the parts of soils is an improvement, and applicable to every soil according to its adhesive texture. The lightest soil will become, in course of time, if left undisturbed, too compact for the proper admission of air, rain, and heat, as well as for the free growth of the fibrous roots of plants; and, on the other hand, strong lands will, in a much shorter time, become quite impenetrable to the roots of vegetables, the strong taproot of the oak, and some others only excepted. Without an abundance of roots, no vegetable flourishes, therefore we ought to adapt the soil, as much as possible, to the encouragement of those necessary organs, the conviction being strongly impressed on our minds, that the quantity of nourishment which is taken up, depends more on the number of absorbing fibres, than the quantity of nutritious extract contained in the soil. The rendering the soil of a proper consistency, by trenching or digging, is not only necessary before sowing or planting, but also during the progress of vegetation, and this should be performed by digging or hoeing between the rows, or round the stems of plants. A strong proof is here adduced of the superiority of planting or sowing culinary vegetables in drills, as, by that means, the operation of pulverization is better and more conveniently performed. Even digging between the rows of some plants is of much importance to them, as by that means, it operates on the principle of pruning, by cutting off or shortening the extending fibres, which causes them to throw out a number of others, by which the mouths or pores of the plants are considerably increased;

and thus, by multiplying the number of organs, the plants will of course collect a greater quantity of food.

The capillary attraction, or that property, which renders the humidity of the soil more uniform, is also promoted by trenching, digging, &c. It is evident, that those soils must be the driest, where the particles of the soil are either naturally of the finest kind, such as sand, or rendered fine by digging or trenching. We find that gravels and sands, which are naturally reduced to fine particles, hardly retain any water at all, and frequently not even sufficient for the growth of vegetables, which is the cause of their sterility; whereas, on the other hand, clays not acted on by artificial operations, either do not absorb water, or when they do, they retain too much. Water is not only necessary to the growth of plants, but also to the production of extract from the vegetable matter which they contain, and unless the soil be brought to that condition, so as to retain a certain quantity of water, just sufficient and no more to produce this extract, all endeavours to fertilize, by means of manures, will be fruitless.

Manure is of no use to vegetation until it becomes soluble in water, and it would remain in that useless condition if it abounded so as to exclude the air, for without air, the fibres, or mouths of plants, would be unable to perform their functions, and so decay, and rot off. This principle, we see completely exemplified in the roots of plants in pots, when over watered, which gradually decay, and the plant dies.

To admit the beneficial effects of air, as much as possible, is an important object. Dr. Darwin mentions, " the great propriety of cropping lands immediately after they have been comminuted or turned over; and this the more especially, if manure has been added at the same time, as the process of fermentation will go on faster when the soil is loose, and the interstices filled with air, than afterwards, when it becomes compressed by its own gravity, the relaxing influence of rains, and the repletion of the partial vacuums formed by the decomposition of the enclosed air. The advantage of the heat thus obtained, in exciting fermentation, whether in a seed or root, especially in the spring, when the soil is cold, must be considerable."

It is necessary that all soils should be kept open by artificial means, for the purpose of admitting a sufficient quantity of warmth to the roots of plants. All earths are bad conductors, and therefore it would be long before the rays of heat could penetrate to a sufficient depth, particularly in spring, to be of much importance to the roots of vegetables, unless, indeed, the soil is, by frequent turning, rendered capable of admitting a free ingress of the warmth, both of the sun's rays and of tepid rains.

Open soils are also necessary for the effecting of those changes, which all manures have to undergo, before they are in a proper state for food to vegetables. Animal and vegetable substances, when exposed to the action of light, air, and water undergo spontaneous decomposition, which would not otherwise take place, and by that process they are properly prepared for the nourishment of vegetables.

The improvement of soils by pulverization, that is, by the operations of trenching, digging, hoeing, and stirring, we consider to be important, but we must not entertain the idea, that the proper management of the land consists in the adoption of that principle only; for, in the strictest sense of the word, pulverization is of no other benefit to the plants which grow in the soil, than that it increases the number of their fibrous roots or mouths, by which they imbibe their food, thereby facilitating the more perfect preparation of that food, and conducting it so prepared more regularly to their roots. Ground should never, for any length of time, lie uncultivated, or without being cropped, unless for the purpose of giving it rest; and in that case, as soon as the crop is cleared off, all the refuse, which is left on the ground, should immediately be dug in; this would not only have a tendency to improve the ground, but would give the garden always a more neat and orderly appearance, and a considerable degree of labor would be thereby economised in the destruction of weeds. The time which it would take to hoe, rake, and clear off the rubbish of a quarter of the garden, when the crops are removed, will be almost equal to that, which it would take to dig it over; and, in some cases, more time would be occupied, independently of the loss of the vegetable matter raked off, and which is carried oft either to the rubbish-heap, or most generally thrown out into the woods, and therefore lost for ever. In most cases, the ground should be thrown up as rough as possible, presenting as large a surface to the action of the air as possible. Where the soil is of a stiff clay, no operation that can be performed within a garden, can be of such effectual use, as fallowing. It not only pulverizes the soil, but effectually clears it of weeds. When once weeds of the rooting sorts, such as, *Ranunculus*, *Triticum*, and some others, overrun a stiff clayey soil, no means can be adopted so likely to be attended with success in eradicating them, as fallowing; and that process is not to be confined merely to digging over the ground, and leaving it in that state for months, till it becomes as bad as it was at first, but it must be followed up by repeated digging, raking, and hoeing, and never allowing the roots time to draw any nourishment from, nor to re-establish themselves in the ground; this will at length exhaust them, and clear the ground of them entirely. Supposing, therefore, that no other advantage were obtained, that no nutritive matter was imbibed from the atmosphere, and the soil was neither chemically nor mechanically improved by the operation, the benefit alone arising from the eradication of the weeds is sufficient to justify its practice.

The advantages of aeration, or fallowing, either in winter or summer, are important; and although that great experimentalist, Sir Humphry Davy, treats the matter lightly, yet the long experience of intelligent agriculturists and gardeners convinces us of the great benefit arising from its practice. One obvious advantage of summer fallowing, they say, is, that the soil may be thereby heated by the sun to a degree, which it never could attain, if partially covered with the foliage of even the widest drilled crops. If the soil be laid up in rough ridges, or with its surface as rough as it possibly can be, it will consequently receive a greater quantity of heat, and will retain that heat longer, by means of the rough pieces thus heated, reflecting back the heat imbibed by each other.

By the aeration of lands in winter, their minute mechanical division is obtained by the freezing of the water in the soil, for as water, when frozen, occupies more space than when in a fluid state, the particles of earthy matter, and of stones liable to decomposition, are thus rent asunder, and crumble down into a fine mould. Independently of the benefits thus derived to the soil, the roots of weeds, insects and their eggs, are destroyed in greater quantities, than is generally supposed.

Strong stubborn soils may be improved by burning, but this is more a matter of agriculture than horticulture. Light ones may be improved by compression, but neither of these soils is very proper for a garden.

In the improvement of soils by the operation of trenching, particular care must be taken to perform it in moderation, that is, to trench the ground according to the depth of the soil. All garden-grounds should be from two to three feet deep of good mould, either natural or artificial, and for the quarters of gardens, this will be amply sufficient. The fruit-tree borders must of course be of various depths, according to the nature of the trees planted in them. In trenching too deep, much injury may be committed, as the better parts of the soil will thereby be buried, and the subsoil brought up to the surface in its crude state, which is wholly unfit for the nourishment of vegetables. The late Mr. Nicol adopted a very rational method of trenching, which is as follows: "Take three crops off the first surface, and then trench three spit deep, by which the bottom and top are reversed, and the middle remains in the middle. Take three crops off this surface, and then trench two spit; by which the top becomes the middle, and the middle the top; and take also three crops off this surface, and then trench three spit, whereby that which was last the middle, and now top, becomes the bottom, and that which is now the bottom, and was the surface at first, now becomes surface again, after having rested six years. Proceed in this manner alternately, the one time trenching two spit deep, and the other three, by which means the surface will be always changed, and will rest six and produce three years. Hence there will always be new soil," (or, that is, soil greatly renovated, there being no such thing in reality as new soil,) "in the garden, for the production of wholesome vegetables; and hence also will much less manure be required, than when the soil is shallow, and the same surface constantly in crop." He goes on to say, upon the supposition that the soil is not sufficiently deep to admit of trenching three spit deep; "in situations where the soil is only so deep to allow of trenching two spit, and where expense in making it deeper may be grudged, the above hint may also be followed with advantage, as by regularly trenching every third or fourth year, the ground will rest half its time; and, if judiciously managed and cropped in proper rotation, wholesome vegetables may be produced in it for many years successively."

There are few instances where a garden can be trenched all in one year, neither is there any necessity for it, one division, quarter, or break, may be conveniently trenched annually, without interrupting the ordinary routine of business; and, perhaps, in no way more conveniently than that recommended for planting the autumnal crops of the different species of cabbage.

A considerable expenditure will be saved, if the choice has been made of a soil of such a nature proper for the formation of a garden. Strong stubborn clays are to be avoided, being the most unfit of all others, as few vegetables will prosper in them, and the expense of rendering them more congenial will not only be excessive, but many years must expire, before all the power of art can ameliorate them in any tolerable degree; and even then, they will be imperfect, as the clay will always have the predominant influence. Sand, lime, chalk, (where it can be procured,) and coal-ashes, correct the tenacity of clayey soils, and make them work more pleasantly; the former, if sharp, or if it be river or sea-sand, with a mixture of shells, will, if dug in, in a sufficient quantity, render it of a lighter texture. Chalk should be spread on the surface in autumn, so that the whole may be pulverized by the action of the winter's frost and rains, and dug in, in spring. It corrects the acidity of the clay, as well as renders it more friable. Lime acts much in the same way, but should be used more sparingly. Coal-ashes have much the same effect upon stiff soils. Lime rubbish dug in, is a good corrector of stiff soils, and is less objectionable than the coal-ashes. Decayed tanners' bark, bog-mould, or any vegetable mould applied to strong soils lightens them considerably. Such soils cannot be too much wrought by the spade; every opportunity should be taken to ridge and rough-dig strong soils, and such operations should not be done in wet weather, nor when the ground has been saturated with wet.

Gravelly soils are also very unfit for garden ground, as being generally of themselves sterile, and not readily enriched by manures, the finer particles of which are washed off by the rains; and they are also subject to suffer much from drought in summer, as they are not capable of retaining a sufficient quantity of moisture to support the crops in dry weather. Such soils are capable of improvement, by divesting them of the greater portion of small stones, and by the addition of strong loam, or even any tolerably good earth; and this must be applied in quantities sufficient to form a body capable of retaining a sufficient quantity of moisture for the support of future crops. Light sandy, or even gravelly soils, are, however, not without their advantages, because they are much warmer; and by affording a much less quantity of moisture, the crops will not grow so luxuriantly, and therefore be much sooner fit for use than those, which are grown on strong clayey soils. Early spring and winter crops are not only much earlier on sandy soils than upon clayey, but are also much more capable of resisting the frost. On the approach, however, of the summer's drought, the crops either fail entirely, or else are unproductive and of short duration.

The soil most proper for the purpose of garden culture should, therefore, be neither too strong nor clayey, nor of too loose and gravelly a quality, but of a rich and rather a light pliant nature, capable of being wrought at all seasons without inconvenience, and of sufficient depth to allow the roots of all sorts of trees and plants to extend themselves with facility. Black vegetable, hazelly brown, and chestnut-coloured loams, are all proper for the purpose of garden ground; and all those, which are of a more stiff and tenacious nature, or too loose, and insufficient to support trees and plants, must be made good by the application of such substances as are of a contrary nature. In procuring mould, either for improving or renewing the soil, care should be taken to prefer such only as is near the surface, as it is in general the most productive and fruitful, and is in reality, the true vegetable earth. The top spit, that is, to the depth of one foot from the surface of any common or field, which has not been much cropped, is to be preferred, and the fuller it is of fibrous matter, the better it will prove for the growth of the plants. Soils of the best quality will be much improved by occasional top dressings of such mould, either applied in its fresh state, or after having been partially ameliorated by being kept in the compost yard for a few months before it is used.

Mould dug from a greater depth is not fit for use in its crude state, but should be exposed a twelvemonth at least to the action of the weather, and even then, it is deficient of most of the vegetable and animal matter, of which the top spit is chiefly composed.

CHAP. III.

VARIETY AND USES OF MANURES.

Vegetables are found by chemical analysis to be composed of oxygen, hydrogen, carbon, and nitrogen, or azote, with a small portion of saline bodies. It is evident, therefore, that the substances employed as manures, should also be composed of those elements, for unless they are, there will be a deficiency in some of the elements in the vegetable itself; and it is probable, that such deficiency may prevent the formation of those substances within it, for which its peculiar organization is contrived, and on which its healthy existence depends. Of these elementary bodies, oxygen, hydrogen and carbon, are contained in vegetable, and the whole of them in animal matter. Nitrogen is sometimes, but rarely, found in vegetable matter. These, with certain salts, form the food or manures of vegetables.

The manures in general use in gardens are numerous, but we shall only notice those, which are considered the most useful, and of these, the dung of horses, if not the best, is certainly the most general in use. With this dung, in different states of fermentation, we grow many of the tropical and exotic fruits and vegetables, which the inclemency of our climate prevents us having in the open air; and after it is of no farther use in those departments, we carry it out to manure our lands. This practice, however prevalent, is condemned by Sir H. Davy and other chemists, who assert that, by undergoing fermentation beyond a certain limit, the principles of manure, or those parts which really constitute the food of vegetables, are lost. All gardeners, however, agree in using manures after they have undergone a certain degree of fermentation, without which, it is supposed they would communicate a rank and disagreeable flavour to fruits and vegetables, and if applied in an immoderate quantity, would, in a considerable degree, give an unwholesomeness to the juices of all plants. To what particular degree this fermentation should be carried, before the manure be laid on the soil, deserves our particular attention.

That slight fermentation is of use before application, is undoubted, for by means of it, a disposition is brought on in the woody fibre to decay and dissolve, when it is carried and dug into the soil; too great a degree of fermentation is, however, very prejudicial to the manure. It is better, says Sir H. Davy, that there should be no fermentation at all, than that it should be carried too far. The excess of fermentation, he adds, tends to the dissipation and destruction of the most useful parts of the manure, and the ultimate results of this process are like those of combustion. It is a common practice to suffer dung to ferment till the fibrous texture of the vegetable matter be entirely broken down, and till the manure becomes perfectly cold and soft: this is the case generally of dung, which has been employed in melon or other hot-beds, and which is generally preferred and used by practical gardeners. During the process of fermentation necessary to reduce it to this state of decay, not only a large portion of fluid, but also of gaseous matter is lost, so much so, that the dung is often reduced to less than two-thirds of its original weight; and the principal elastic matter, which is lost or disengaged, is carbonic acid with some ammonia, either of which, if retained or conveyed to the soil, is capable of yielding a considerable degree of useful nourishment to plants.

It is also argued in favour of unfermented dung, that it goes much farther; if this really be the case, and that it produces no bad effect on the fruits and vegetables, it will be important to devise other means of producing heat for the production of forced vegetables, and by so doing, reserve for the soil that proper nourishment, which is designed by nature for the food of plants. But this is a matter of much less consequence to the gardener, than it is to the farmer. The former has generally much less space to go over, and his productions are generally of such a description, as to be more sensibly affected by the application of crude and unprepared manures, which are apt to communicate a rank and disagreeable flavour to vegetables, and are productive of serious injury to the roots of tender fruit-trees, if applied in certain quantities and qualities. In most cases, therefore, we would recommend the application of manure which has undergone a degree of fermentation in the hot-bed; or if it has remained two or three months in that state, it will not be too much, unless fermentation has been greatly excited. In this state, it will be better for the garden than dung quite fresh, or that which may have lain for a twelvemonth.

The following table shows the relative constitution of common stable manure, and our usual crops.

Stable Manure.	*Crops.*
Carbon,	These are chief components of all plants;
Hydrogen,	
Oxygen,	
Nitrogen,	In some vegetables;
Carbonate of Lime,	In almost all plants;
Muriate of Potash,	In Cucumbers, Garlic, &c.;
Muriate of Soda,	Perhaps in all plants;
Sulphate of Potash,	In Cucumbers, Garlic, &c.;
Magnesia,	In all corn, and many other plants;
Phosphate of Lime,	Potatoes, Onions, &c. &c.;
Oxide of Iron,	In most plants;
Alumina,	In most plants.
Silica,	

Next to the dung of horses, that of oxen and other cattle is in general use, and if slightly fermented, is an excellent manure for light hot soils; it is also well calculated for soils of a dry absorbent nature, as it retains its moisture for a greater length of time than most others.

Green vegetable matter is an excellent manure, but less attended to than it ought to be. All plants in a succulent state contain much saccharine or mucilaginous matter, and therefore cannot be used too soon after their death. It has been the practice to carry all vegetable matter considered as useless to the compost yard, and, by collecting it in a mass, a quantity of vegetable mould or manure, has thus been procured; but this is a great waste of the best parts of the manure, and should only be adopted when such vegetable mould may be required for particular purposes. Instead of collecting all the weeds, useless vegetables, &c., in a garden to one heap, let the following simple mode be adopted. When a piece of ground is going to be dug, go round and collect all the decaying vegetables, &c., and immediately dig them in. The sweepings of grass-walks and lawns are also of much use as a vegetable manure; and on being brought every day into the garden, they should be dug in, before fermentation commences. But it must be observed that they should not be buried at too great a depth, otherwise fermentation will be prevented by compression, and the exclusion of air. Green crops, pond-weeds, the parings of hedges or ditches, fresh turf, or any kind of fresh vegetable manure, require no preparation to fit them for manure. The decomposition slowly proceeds under ground, the soluble matters are gradually dissolved, and the slight fermentation that goes on, checked by the want of a free communication of air, tends to render the woody fibre soluble, without occasioning the rapid dissipation of elastic matter.

Sea-weeds, where they can be procured, make excellent manure for most vegetables, but particularly for sea-kale, artichokes, and asparagus. This manure is transient in its effects, and does not last more than for a single crop, which is accounted for by its containing a large portion of water, or the elements thereof. It decays without producing heat when exposed to the atmosphere, and seems, as it were, to melt down and dissolve away. It is sometimes suffered to ferment before it is used, but this is quite unnecessary, for there is no fibrous matter rendered soluble by that process, and a part of the manure is therefore lost. The best cultivators use it, as fresh as it can be procured, and the practical results of this mode are exactly conformable to the theory of its operation. The carbonic acid, formed by its incipient fermentation, must be partly dissolved by the water which is set free in the same process, and thus becomes capable of being absorbed by the roots of plants. As a manure, the effects of sea-weed must depend on this carbonic acid, and on the soluble mucilage which it may contain. Some fucus has been found to have lost half its weight by fermentation, and afforded less than one-twelfth of mucilaginous matter; from this we may conclude, that some of this substance is destroyed in the course of fermentation.

The dung of birds, either wild or domesticated, affords a powerful manure, particularly that of the former. We are informed by Humbold, that the *guano*, which is used to fertilize the barren plains of Peru, is employed in such quantities for the maize crops, that fifty vessels are laden with it annually at Chinche, each of which carries from fifteen hundred to two thousand cubical feet.

Pigeon's dung was, and still is, in great esteem in Persia, where they manure their melons with it, and was sold at a high price during the famine in Samaria, when a cab, *not quite three pints corn measure*, sold for five pieces of silver. It is a powerful manure, and should only be used as a compound, or if used as a simple, the greatest care must be observed in the distribution of it. We have found it the best manure for strawberries of any which we have tried. If used as a compound with fresh loam, cow-dung, or other manure, it should lie for some time to be sufficiently incorporated, so as to admit of equal distribution.

The dung of sheep and deer affords good manure, but is seldom used in gardens; nevertheless, if circumstances would admit of it, sheep folded for a few nights on any spare garden-ground would do much to improve it; in such a case, however, it would be necessary to have it dug in as soon as possible, as by lying long on the ground, the better parts of it soon escape by evaporation. Its chemical properties are nearly the same, and, by long boiling in water, are found to afford soluble matters, which equal from two to three per cent. of their weight. These soluble substances, which are produced by solution and evaporation, contain, when examined, a small quantity of matter analogous to animal mucus, and are principally composed of bitter extract, soluble both in water and alcohol. They give ammoniacal fumes by distillation, and differ very little in composition.

Soot is a very powerful manure, and ought to be used in a dry state, and thrown on the surface of the ground. It is supposed to be a preventive, to a certain extent, to wire-worms and maggots. This is, probably, owing to its bitter extract, which it gives out to hot water. It likewise contains an empyreumatic oil. It has been used on crops of onions; it is sown at all times with good effect, and where it has been sown, no maggot has appeared. It also has been used for a like purpose on garden and pasture-land, most probably for the extinction of the wire-worm, but a solution of it in water would perhaps be preferable.

Bones have of late years been much used for a manure. After they have been boiled for the grease which they contain, they are then sold for manure, and have been strongly recommended for vine borders. The expense of collecting and grinding them is too great to allow of their general adoption.

Horn is a similar manure to bone, only much more powerful, as it contains a larger quantity of decomposable animal matter. The shavings or dust of horn, form an excellent manure, but, like the dust of bones, are not to be obtained in sufficient quantities to be of general use.

Blood contains a certain quantity of all the principles found in other animal substances, and is, consequently, a good manure. It may be collected in some quantities at the slaughter-houses of butchers in large towns, and where sugar manufactories are carried on, bullocks' blood being used there in the process of separating by the heat of the boiler, the impurities of brown sugar, by the coagulation of its albuminous matter.

Much has been said of late years for and against the use of salt as a manure. Mr. Joseph Hayward, the ingenious author of the Science of Horticulture, &c., observes, after making many experiments with sea-salt, nitre, soda, barilla, alum, &c., that he never found them operate so as a proportional addition of food might be expected to do, and draws the following conclusion: "Notwithstanding all that has been said to establish the opinion, that sea-salt is a valuable manure, I am convinced it never can, as an article of food, contribute to the increase of any vegetable; but as a chemical agent, by destroying and facilitating the decomposition of animals and vegetables, or by its deliquiescence, it may, in some instances, increase the fertility of the soil."

Urine of most animals affords a good liquid manure, but it is necessary to use it as soon as possible, as it is liable to undergo the putrefactive process, and the urine of some animals putrifies more rapidly than that of others. It should never be applied as a simple; and if not mixed with solid matter, it should be diluted with water. When pure, it contains too large a portion of animal matter to form a proper nourishing fluid for the absorption of plants.

The ashes of wood, if not too much burnt, are said to be a lasting manure; this, however, must depend on the quantity of charcoal which they may contain, resulting most probably from the slow and gradual consumption of the charcoal parts. These ashes are obtained in considerable quantities from lime or brick-kilns, where wood is used for burning. They are generally sown among turnips, and are supposed to be of use in protecting them from the fly. Charcoal-dust may be often obtained, where it is made for the iron manufactories, or for domestic purposes. This dust gives out its fertilizing properties in the most slow and gradual manner possible.

Saw-dust, shavings, and tanners' bark, are sometimes applied as manure; but as they are mere woody fibre, which is the only vegetable matter that requires fermentation to render it nutritive to plants, little good is to be expected from their application. Either of them, however, may be used as a corrector of strong lands, without doing any injury, if not applied in an immoderate quantity. All animal substances are powerful manures, and require no chemical preparation to fit them for the soil. The great object is to blend them with other matters, so as to prevent their too rapid decomposition.

Of all mineral manures, lime is most known, and generally used, and various have been the conjectures regarding the method of its application. It is generally used either as quick lime, that is, in the state immediately after being burnt, and before it has been much exposed to the action of atmospheric air, or before water has been applied to it. It is also used as mild lime, which is quick lime exposed for a certain time to the action of the atmosphere. The solution of the question, whether quick lime should be applied to a soil, depends on the quantity of inert vegetable matter that it contains; and the solution of the question, whether marl, mild lime, or powdered limestone ought to be applied, depends on the quantity of calcareous matter already in the soil. All soils which do not effervesce with acids are improved by mild lime, and ultimately by quick lime. Sands are more improved by lime than clays. When a soil, which is deficient in calcareous matter, contains much soluble vegetable manure, the application of quick lime should always be avoided, as it tends either to decompose the soluble matters, by uniting to them carbon and oxygen, so as to become mild lime; or it combines with the soluble matters, and forms those compounds, which have less attraction for water, than the pure vegetable substances: the case is the same with respect to most animal manures, but the operation of the lime is different in various cases, and depends on the nature of the animal matter. Lime forms a kind of insoluble soap with oily matters, and then gradually decomposes them by separating from them their oxygenic and carbonic properties. It combines also with the animal acids, and probably assists their decomposition by abstracting carbonaceous matter from them combined with oxygen, and consequently it must render them less nutritive. It tends, likewise, from the same causes, to diminish the nutritive powers of albumen, and always destroys, to a certain extent, the efficacy of animal manures, either by entering into combination with certain of their elements, or by giving them a new arrangement.

Lime should never be applied with animal manures, unless they be too rich, or for the purpose of preventing noxious effluvia. It is injurious, when mixed with any common dung, and tends to render the extractive matter insoluble. All limes have not the same effect; lime-stones, containing *alumine* and *silica*, are less fitted for the purpose of manure, than pure lime-stone; but the lime formed from them has no noxious quality: such stones are less efficacious, merely because they furnish a less quantity of quick lime. There is seldom any considerable portion of coaly matter in bituminous lime-stones, never exceeding five parts in one hundred, but such lime-stones make very good lime. The carbonaceous matter can do no injury to the land, and may, under certain circumstances, become a food for the plant. Lime that contains certain portions of magnesia has been found to do much injury to the crops on which it has been applied; while, in other cases, it has been found to be productive of much good. It is a general remark, that lime containing magnesia may be applied in large quantities to *peats;* and that when lands have been injured by the application of too large a portion of magnesian lime, *peat* will be the most proper and efficient remedy. Nitric acid, or aquafortis, is a simple test to detect the presence of magnesia in lime-stone. The application is to steep the stone in the diluted liquid, and the magnesia will be detected by its turning the liquid of a milky hue. Magnesian lime-stones are usually of a brown or pale yellow color.

Coal was first discovered by Hazenfrez to be an essential ingredient in the food of vegetables, and is now used as a manure with good effect. Mr. Kirwan observes, that coal, "though hitherto little attended to, appears to be one of the primeval principles, as ancient as the present constitution of our globe; for it is formed in fixed air, of which it constitutes above one-fourth part, and fixed air exists in lime-stones, and other substances, which have their date from the origin of things."

Manures, whether animal or mineral, are of such importance to vegetation, that we should use all possible diligence in the collecting and preparing of them for the different purposes, for which they may be required. By a proper application of them, and by a rotation of cropping, founded on just principles, the worst garden-ground may be not only improved, but rendered fit for the production of every vegetable, that is usually cultivated in these islands.

For the more convenient preparation of compost manures, a piece of ground, to which all fertilizing matter is to be carried, should be enclosed near the garden, and so situated as to enjoy the full influence of sun and rain, there to be incorporated, fermented, and prepared for the several purposes for which they may be wanted. In this place should also be accumulated all sorts of moulds, for the greater convenience of having them ameliorated, and rendered fit for their destined purposes; either to be mixed in composition with other manures, or to be used simply for the growth of peculiar plants, or for improving and renewing such pieces of garden-land as may require it. In collecting these moulds, recourse must be had to the fields and commons, where they are to be obtained. No pains should be spared in collecting a sufficient quantity, and they should be applied with an unsparing hand to those parts of the garden which may require them. But when it happens, as is often the case from a variety of circumstances, that moulds of good quality cannot be easily procured, a rigid care must be taken of them, as they will be required for some of the more delicate plants; and substitutes must be devised when such moulds are not to be had in their primitive state, which may be effected by blending substances of opposite principles, which often produce a compound extremely well calculated to promote the welfare of certain plants. No opportunity should be lost in collecting earths of various sorts from all places where they are to be procured. The scrapings of turnpike roads are a useful manure in strong lands, provided the roads be composed of gravelly or chalky materials. Thus road-sand formed of pounded flints, which is often to be met with, is not only an excellent manure and a lightener of strong lands, but also makes very good walks, which are both dry and easily kept clean.

The following method of obtaining a cheap and efficacious manure, is recommended by Mr. James Reed, of Bristol. Raise a platform of earth, on any spare piece of land, eight feet wide, one foot high, and of any length according to the quantity wanted. On the first stratum of earth lay a thin stratum of lime, fresh from the kiln; dissolve or slack this with brine from the rose of a watering-pot, and immediately add another layer of earth; then lime and brine as before, carrying it to any convenient height. In a week, it should be turned over, carefully broken and mixed, so that the whole mass may be thoroughly incorporated. This compost has been used in Ireland; has doubled the crops of potatoes and cabbages, and is said to be far superior to stable dung.

CHAP. IV.

DRAINING, ITS VARIETIES AND EFFECTS.

Draining must be acknowledged as the principal step towards the improvement of soils, particularly such as are, either from their natural situations, overcharged with moisture, arising from their lying below the general level of the surrounding grounds, or from the existence of natural springs within them. Although this be a subject, which falls more particularly under the arrangement of the agriculturist, it is nevertheless of the first importance to the gardener. Soils naturally wet, or subject to excess of moisture from various causes, are of all others the least fit for the operations of garden-culture. Circumstances, however, may occur, when from a want of sufficient choice of situation, the garden may be so placed as to require to be rendered perfectly dry by artificial means; and indeed in all situations, draining should be particularly attended to, were it for no other purpose than to carry off the superfluous moisture occasioned by heavy or long-continued rains. As a precautionary measure, we would recommend, that whatever the soil or situation may be, it should be sufficiently and substantially drained before any attempts be made for further improvements. Soils naturally wet, are cold and late; however abundantly they may produce certain crops during the heat of summer, are, nevertheless, to the majority of garden productions, attended with the most injurious consequences. Although plants will not live without water, a superabundance of it is equally detrimental to them, particularly when it remains stagnant at their roots, by obstructing perspiration and intro-susception; and whenever that be the case, they soon become diseased and ultimately die.

The process of draining is performed in a variety of ways, according to the soil to be operated upon, and the materials of which they are to be constructed. Our limits will not admit of entering into the details of the different varieties and sub-varieties of draining, neither is it at all necessary for our purpose, as the extent of ground, under the most unfavourable circumstances in the formation of a garden, is capable of being rendered perfectly dry by the ordinary methods of draining.

Water, like all other fluids, remains stationary when obstructed, but when unobstructed, proceeds by the force of its own gravity. A tube filled with water, and placed perfectly horizontally, with both ends open, the liquid will flow equally at both ends; but elevate one of the ends of the tube, and the water will flow out at the other with a rapidity proportionable to the elevation of the tube and the weight or quantity of water it contains. In the process of draining, therefore, the main or principal drains should be formed on an inclined plane, into which the smaller or collecting drains should empty themselves, and the greater the fall of the principal drains, the more readily will they discharge the water collected in them. The principal drains should commence at a considerable distance from the garden, so as to admit of their discharging their contents at a proper distance from it, and they should extend in a direction towards the hot-houses, sheds, or other horticultural erections, and also to those points, which indicate any appearance of springs or superabundance of moisture; and, as we have before noticed, for the greater facility of repairing or examining them at any future period, they should run under the walks as far as the nature of the situation will admit.

The materials of which drains are composed are various, and depend on the facility with which they can be procured. In situations, where stones can be had, they make the best and most lasting drains; flints, chalk in large pieces, which have not been exposed to the air for any length of time, and brick-bats, are all excellent materials for drains. Brush-wood is not unfrequently used in countries where none of the abovementioned materials are to be procured, and although making a less permanent drain, will, for a few years, act sufficiently, yet, from the liability of wood to decay, it is probably the worst material that can be chosen for this purpose. Earthenware tiles of various forms and sizes, have been used for draining, but these materials are better adapted for carrying off the water when once collected, than for the actual purpose of collecting it; however, they are sometimes made perforated with a considerable number of holes for the purpose of admitting the water into them. For lands liable to sudden inundations, tile-draining is excellent, and the nearer the surface they are, provided they be under the reach of the plough or spade, the more effectually will they act. Whichever of these materials be used, it is important that they be laid as hollow as possible, that the water may the more readily find a passage through them; and, in forming the main or principal drains, they should be built, so as to leave an open space, at least nine inches or a foot square, at their bottoms; over this should be laid, in an open manner, a sufficiency of the same material wherewith to fill the drains to within a few inches of the surface of the walks, if the drains be placed under them, and to within fifteen or eighteen inches of the surface of the ground, when they are under the quarters or borders. The depth at which these principal drains should run, can only be determined by local circumstances; but the collecting or cross drains need not be either so deep nor yet so broad, neither is it requisite that they should be built with a vacuity so capacious. For most purposes, a space of a few inches in the clear will be sufficient, and should be formed of the following shape, Λ, which is readily done by placing the larger pieces of the materials resting against each other at the top, and thus forming a rude, though strong arch, capable of resisting any pressure, which is likely to be placed upon it. Like the main drains, the nearer to the surface these smaller ones can be filled with porous materials, the better will they collect and carry off the superabundant water. In draining with brush-wood, no cavity is usually formed, although no doubt can exist that for principal drains, two planks laid so as to leave a triangular vacuity under them would be beneficial in its effects, and admit of the water passing more readily off. Where gravel is to be had, excellent drains may be formed by introducing drain tiles in the bottom, and filling up the remainder of the drain to a sufficient depth with coarse gravel; and, in such cases, the expense of screening out the finer particles through a coarse screen will be repaid by facilitating the escape of the water. Consistently with a previous observation, chalk, when newly dug, and when it runs in large pieces, makes drains equal to stone, but it must be used before being exposed to the action of the atmosphere, for when once charged with moisture, and exposed to frost, it becomes pulverized; but if used soon after it is dug, it will last for ages, and of itself absorb a large portion of moisture. Heath and furze are not unfrequently used for draining when no better materials can be procured, but when laid in quantities even considerably below the surface, and beyond the action of the air, they are liable, from their disposition, to ferment. They may be used for temporary draining, and for that purpose are often employed by agriculturists; but in draining ground for garden-purposes, the inconvenience which arises in repairing such drains is so great as to render all kinds of temporary draining, radically bad. There are few soils, during their preparation for garden-purposes, which do not afford a considerable quantity of stones, gravel, &c., and the refuse in the erection of walls, hot-houses, &c., if collected, will supply, in many cases, sufficient materials for this purpose. When they are found inadequate, recourse must be had to other sources to supply the deficiency. Draining, although long practised in the improvement of soils, has only of late years been properly understood; and it must be admitted, that too little attention is generally paid to this important point, in the first formation of many gardens. Whenever that be the case, the defects will for ever be obvious in the diseased state of the fruit-bearing trees, and in the late and unproductive crops of the most common vegetables.

When the garden is so situated as to be subject to occasional floodings, from the rapid melting of snow or sudden falls of rain, which is frequently the case, when lying at the foot of hills, or on steep declivities, it is often necessary in such cases to open drains along their highest side, on the exterior of the boundary fence, to cut off the possibility of its entering into the ground, which, were it permitted to do, the consequences would be fatal to many of the smaller crops, by washing a great portion of earthy matter over them, and repeated inundations of this kind would ultimately carry off the greater and better portion of the soil from the most elevated parts, and deposit it in those parts, which are lower.

As these floods are generally confined to the surface-drains for their reception, they need not be deep, provided that they be regularly cleared of filth, which will naturally accumulate in them. But as this is a matter not always attended to, it is better to make them of a considerable depth in the first instance, say from three to four feet, according to local circumstances. Where land-floods are not apprehended, it also becomes necessary in many instances, where the declivity is great, or the situation placed at the bottom of rising grounds, to make considerable drains for the purpose of cutting off the quantity of water, which naturally flows from them. For this latter purpose, it is requisite they should be cut to a much greater depth, in order the better to intercept the water, as it flows through the strata, which, in many cases, are several feet below the surface. Unless such drains are sunk below the channels through which the water flows, little good can be expected to arise from them. Deep open drains are objectionable, inasmuch as they occupy a considerable space of ground, which is thereby rendered almost useless; still, for this and similar purposes, they have a decided advantage over those, that are filled up even with good materials, by cutting off more effectually the flow of water. Drains for this purpose might be readily constructed so as to answer both purposes, by filling up the bottom part of them, as already recommended for principal or main drains, and leaving the upper half in form of an open drain, sloping the banks back to prevent their falling in.

Willows and dwarf trees or shrubs may be advantageously planted on their banks, and would soon hide them, where that is deemed necessary. The depth to which drains should be cut depends in all cases on the nature of the soil, the depth of springs, and other circumstances for which no direct rules can be laid down. We, however, may go so far as to say, that deep clayey soils seldom require deep draining; their natural closeness of texture preventing the process of filtration from going on; and if rendering the surface dry, be the object in view, the drains cannot well be made too shallow, provided that they do not impede the necessary operations of digging and trenching: for such soils, three feet may be esteemed an average depth for the collecting drains, but the principal ones should always be regulated in depth by the level necessary for carrying off the water.

Where the soil is of a mossy nature, the effects will be more complete if the stratum be completely cut through, as the water will be found in such cases to flow in greater quantities between that, and the stratum immediately beneath it. Gravelly soils are of all others most effectually drained, even should they be charged with a greater quantity of water; for as it is of all soils the most porous, the water consequently finds a more ready passage through them. As draining is attended with a great expense when carried to any considerable extent, the least quantity of solid matter to be removed becomes important; hence it follows, that the narrower that they can be cut, the less expense will attend the operation, and a less quantity of draining materials will be required to fill them. As a general rule, from which there are few exceptions, they should not be cut broader, than merely sufficient to admit of the operators getting to a sufficient depth; and in most cases, where no obstacle, such as rock occurs, for drains of four feet in depth, two feet in width will be amply sufficient, but for drains of greater depth, the breadth must be increased accordingly.

Deep drains should always be filled up and finished as the operation of excavation goes on, for if they be left open long they not unfrequently fall in, and often render the labor and expense doubly great. When drains are made up to their proper height with stones, or any of the substitutes recommended, a small quantity of heath, straw, or shavings, should be put over the stones to prevent the finer particles of soil filling up the crevices between them, and where none of these can be conveniently got, thin turf laid with the green side undermost will be an excellent substitute.

The season best calculated for the process of draining is either late in autumn or early in spring, at which periods, the springs are high; the probability, therefore, of detecting their course is then more likely to be attained than at any other period during summer, when the quantity of water will be lessened by evaporation, or during the winter months, when the springs also become low or are impeded by the frost.

CHAP. V.

SYSTEMATIC ALTERNATION OF CROPS.

In the cultivation of the ground, either in farming or gardening, a proper attention to the regular rotation of crops forms one of the first and principal features of good management, although its beneficial influence has not yet been fully accounted for by chymists. The rationale of rotation is thus given by Sir Humphry Davy: " It is a great advantage in the convertable systems of cultivation, that the whole of the manure be employed; and that those parts of it, which are not fitted for one crop, remain as nourishment for another. Thus, if the turnip be the first in order of succession, this crop manured with recent dung immediately finds sufficient soluble matter for its nourishment, and the heat produced by fermentation assists the germination of the seed, and the growth of the plant. If after turnips, barley with grass-seed be sown, then the land being but little exhausted by the turnip crop, affords the soluble parts of the decomposing manure to the grain. The grasses, rye-grass, and clover remain, which derive a small part only of their organized matter from the soil, and probably consume the gypsum in the manure, which would be useless to other crops; these plants, likewise, by their large system of leaves, absorb a considerable quantity of nourishment from the atmosphere, and when ploughed in, at the end of two years, the decay of their roots and leaves affords manure for the wheat crop; and, at this period of the course, the woody fibre of the farm-yard manure, which contains the phosphate of lime, and the other difficultly soluble parts, are broken down, and as soon as the most exhausting crop is taken, recent manure is again applied."

Gardeners should pay particular attention to rotation of crops, as far as the nature of the thing will admit of; a good practice is to sow down part of the garden every season in grass, clover, and barley, which may be used as green food for horses and cows. The barley should be sown with the clover, and cut down, not being allowed to ripen; thus it acts as a nurse and a shade to the clover. But, in all cases where this is done, let the ground be laid down in as good condition as possible, and the manure laid on will not be lost. Land thus laid down in grass should continue so for two years, or if for three the greater will be the benefit. However, this is generally regulated by the quantity of ground which can be spared from crops, for the time when the ground is wanted. The crop of grass, if dug in, but not too deep, for reasons given already, will materially improve the soil; but on no occasion whatever trench it in, as is too often the case. This practice, although excellent, can however only be applied to gardens on a large extent; for its adoption would not be attended with the same advantages in the general run of our gardens.

By a rotation of the perennial crops, such as quartering out currants, gooseberries, and raspberries, &c., the ground will not only be renewed, but also rested, or at least very much improved. None of these crops need occupy the ground above twelve years, and not less than three; this, together with trenching for the principal crops of autumn-planted brassica will keep the ground in fresh order, and be attended with no loss of space; for in all large gardens, and the generality of small ones, new plantations of these things should be made to a certain extent annually, which will throw a certain proportion of ground into regular rotation. In cropping all gardens, as far as it can be rendered practicable, rotation should be aimed at, and thus, by keeping all the legumes, as peas and beans, the brassica or cabbage kinds, the bulbous or onion kinds, and lighter crops, as salads, &c., by themselves, each following in regular succession, the garden would not only look better, but would, to a certain degree, produce the rotation required. In no case should any of the brassica tribe follow another upon the same piece of ground, neither should peas follow peas, nor beans, beans; onions are, probably, the only exception in garden culture. A journal, or plan of the garden should be kept, and the ground divided into portions, each of which should be numbered, and a careful record kept of all crops, manurings, trenchings, &c.

The necessity of rotation is pointed out to us by nature; for all perennial herbaceous plants have a tendency to extend their circumference, and to rot and decay at their centre, where others of a different kind, spring up and succeed them. This is particularly exemplified in the strawberry, and all such stoloniferous growing plants; mushrooms are said never to rise two successive years on the same spot. The production of the phænomenon, called fairy rings, has been ascribed to the power of the peculiar fungus, (*Agaricus orcades*,) which forms it, of exhausting the soil of the nutriment necessary for the growth of the species. The consequence of which is, that the ring extends itself annually, as no seeds will grow where their parents grew before them; at the same time, that the interior of the circle has been exhausted by succeeding crops; but in those places, where the fungus has died, grass has grown luxuriantly, nourishment being thus left for the support of grass and other plants, after the agaricus has exhausted all that was destined by nature for it.

All crops for a few years thrive well on newly turned up virgin mould, but in a few years they degenerate and require a fresh soil. Land, in the course of years, often ceases to produce the most common vegetables, and fields which are well laid down with cultivated grasses, lose every one of them in a few years; they become, as it were, tired of them, but the truth is, that they have exhausted the nourishment proper for their respective sorts, and consequently die, and give place to others. This fact is frequently experienced by botanists to their regret, for a plant is often found in abundance for years, in one field or wood, and in course of time wholly disappears.

A change of crops is founded on an acknowledged fact, that each sort of plant draws a nourishment peculiar to itself. On this principle, after a piece of ground has nourished one crop, another of a different description may succeed. Nothing can relieve the soil more than a rotation of crops judiciously arranged, according to which plants of different habits and constitutions succeed each other. To reduce this to practice, we will suppose a quarter of sea-kale or asparagus, the roots of which are large, and have penetrated to a considerable depth, and which have remained in the ground for several years; and further, that they have exhausted the soil, in which they grew, of those parts which constituted their principal food, and in consequence, that they have ceased to thrive; then instead of re-planting the same piece of ground with young plants of the same kinds, let them be entirely cleared away, and the ground dug, and cropped with peas, beans, or any of the leguminous kinds, whose roots do not penetrate to any great depth, and they will derive sufficient nourishment, either different to the former kind, or such as the root of the preceding crop was too deep to absorb. In like manner, let the new crop of sea-kale, or asparagus, succeed some crop of a light description, such as any of the common annual culinary vegetables. It is a rule, from which only extraordinary circumstances can warrant a departure, never to plant a new set of perennial stock on the ground from which has just been removed a plantation of the same or a similar species, which has worn itself out. On the contrary, crops which strike deep should be succeeded by such as pierce but a little way into the ground; and crops which have occupied the ground for any length of time should be succeeded by such as are either biennial, or indeed annual.

From the general richness of garden-ground, and much manure being constantly employed in the raising of garden-crops, much less attention has perhaps been paid to the courses of cropping in the garden, than in the field. It is, however, equally necessary in one case as in the other, and the same principles are applicable to both.

A variety of circumstances, however, conspire to prevent its being so effectually accomplished in the garden as in the farm; such as the smallness of the portions of ground generally allotted to this use; the vast number of articles which are to be grown, and their great similarity and relation to each other. The following classification may be considered the most proper:

Broccoli, cabbage, cauliflower, and savoys;
Common beans, French beans, and peas;
Carrots, beets, and parsnips;
Turnips, early potatoes, onions, leeks, eschalots, &c.;
Celery, endive, lettuce, &c. &c.

It is found in practice that celery constitutes an excellent preparation for asparagus, onions, and cauliflowers.

Turnips or potatoes are a good preparation for cabbages or greens.

Broccoli or cabbages are a proper preparation for beans or peas.

Cauliflowers prepare well for onions, leeks, or turnips.

Old asparagus land affords a good preparation for potatoes or carrots.

The strawberry, currant, gooseberry, and raspberry, for the same.

Turnips give a suitable preparation for celery or endive; and peas, when well manured, are a good preparation for spinach, &c.

By properly attending to all these different points of management, crops of almost all descriptions may be put into the soil, so as to succeed with much greater certainty, and in a much more perfect manner, than is usual in the ordinary methods of putting them into the ground.

MONTHLY OPERATIONS

OF THE

KITCHEN GARDEN.

JANUARY.

CULINARY VEGETABLES AND HERBS.

SOWING CARROTS.

WHEN the weather is open and dry, about the beginning or middle of the month, prepare a warm spot of ground for a crop of early horn carrots: dig the ground deep and break it well.

This, however, is only intended for a limited crop to come in for use a little before the general one; therefore only a small piece of ground should be provided for this purpose. Choose a fine dry day to sow the seed, scattering a few radishes amongst it, and rake it in as soon as sown.

The Alteringham carrot is the best sort cultivated for general use, and is, for an early crop, preferable to the early horn, but is less generally known. Where there is the convenience of frames, and glasses to spare, a slight hot-bed may be now put up for carrots, and would be fit to remove in March, after bringing forward a crop of this esteemed vegetable. In light sandy soils, carrots sown now, or even in November, will do very well; but in heavy, clayey, wet soils, little good can be expected. In such a case, it will be necessary to make up a bed of light mould, for the purpose of getting up such crops with any degree of success.

SOWING PEAS.

Peas may now be sown on an early border, or other warm situation, if the weather be open, and the ground pretty dry. The *true* early frame, nimble taylor, and charlton, are the best for early sowing.

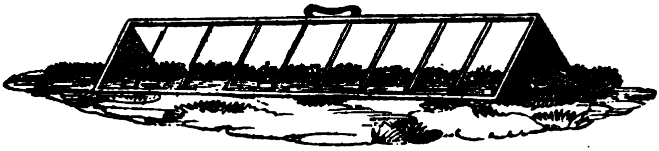
The early frame, if the true sort, will fruit a few days sooner than the charlton; but it grows low, and bears scantily. The charltons are not only very early, but great bearers, and excellent peas for the table; and are, therefore, equally fitted for the early crop, and forward succession crops, and inferior to few for the principal summer crops. The hotspurs are hardy and prolific, and make returns nearly as quick as the charlton, and about a fortnight before the marrowfat. These sorts, therefore, are the best for sowings made from the end of October till the middle of January, and for late crops raised between the middle of June and the beginning of August.

Early crops sown on a border should be always in a longitudinal direction; for if sown across the border, the one end of the rows will be fit for use, when the other end is hardly in flower; and when sown longitudinally, one row will be enough in narrow borders, which should be placed so far from the wall as not to shade the fruit-trees, still near enough to derive protection from it; the remaining part of the border, between the peas and the walk, may be cropped with early cauliflower, lettuce, salads, &c., which, being low-growing crops, will not shade the peas. In borders of the greatest breadth, the lines of peas may be sown diagonally, which will admit of their being sown at from three to four feet apart, and thus give a greater bulk of crop.

They should be sown in drills, three or three and a half feet apart, according to the sort of peas and quality of the ground, and three inches deep. Allow plenty of seed, as they will be subject to accidents at this season. Cover with the hoe or rake, but do not tread them in, as that would bind the ground too much at this season. The ground for peas, unless very poor, should not be dunged, being apt to encourage the growth of too much straw, and, consequently, a less number of pods. Peas, as well as many other crops, are much improved by being transplanted from the bed in which the seed has been sown to another piece of ground, where they are to come to maturity. For this purpose, they are often raised in pots or boxes in forcing-houses, and gradually hardened to stand in the open borders, first by removing them from the forcing-house to a frame protected with mats, and then, according to the state of the weather, removed to the bottom of a wall, or pales, or other sheltered situation, protected by branches of spruce, or other trees; and finally transplanted, where they are to remain. The operation of transplanting is by no means tedious, and will repay the trouble by the fruit coming much earlier, and being much more prolific; or they may be sown in boxes or pots in October or November, and removed to sheltered places, as circumstances may direct, and finally planted out in rows in February or March. *(For transplanting Peas, see March.)*

For the gardens of cottagers and artizans, we would recommend the charlton and nimble taylor for their first crop, an the blue Prussian and dwarf marrowfat for their principa crops. In wet cold soils, peas at this season should be sow upon the surface of the ground, a small ridge of mould being drawn over them, which will prevent them from rotting; and the rays of heat will, consequently, penetrate better to them upon an elevated surface than upon a level one.

The crops sown in October and November, and such as are above the ground, should be protected in severe weather with the *pea-glass* case, which is a triangular frame of any convenient length, the sides being at right angles, and each ten or twelve inches broad. The front is glazed with small pieces of glass to transmit light, and the back is composed of a board of the above breadth; the third side or bottom is open. Upon



the top it will be convenient to have a handle, for the purpose of removing it, as circumstances may require. Glass cases of this sort ought to be in every garden, and will be extremely useful for protecting all sorts of crops, and can be procured at a very trifling expense. Some use a frame similar to the above, made by nailing together two boards lengthways at right angles. This is very useful for protecting early crops, but is not so good as the other, as it excludes the light; nevertheless, it may be used with propriety for covering the crops at night. Early crops of peas will be forwarded by rearing a bank of mould on the north side of each row, of twelve or fifteen inches in height, the rays of heat will reflect on the crop, if the bank be not placed at too great a distance from the row. We have found when the crops of peas have been sown longitudinally along the border, that hurdles, or Dutch mats, placed upright along the north side have greatly sheltered them, and often, when the crops are sown across the border, much benefit has been derived from hurdles placed on each side of the row, about twelve inches apart at bottom, and fixed together at the top. This has protected them from the frosts, at the same time that it has not shaded them too much. Cottagers, whose little gardens are often placed in favorable circumstances, might, by strict attention to the cultivation of early beans, peas, and potatoes, derive a considerable profit by having them as early as possible, and in almost every situation find a ready market for them.

PLANTING BEANS.

About the beginning of this month, if the weather be open, let some ground be made ready for a general crop of broad beans. The particular state of the weather, and the sort of soil, are always to be considered, for nothing is gained, but, on the contrary, much is lost by sowing or planting, when the ground is not in a proper state for the reception either of the seeds or roots, and it is needless almost to observe, that the ground cannot be too dry at this season.

For the larger sorts, let the rows be three feet apart from each other, and plant the beans two or three inches deep, or sow them in drills of the same depth, and about four or five inches apart in the rows. The smaller sorts may be only two feet apart, and two or three inches in the rows.

The mazagan is the hardiest and best flavoured of the small and early sorts, and is best calculated for the earliest crops. It is said that seeds imported from Mazagan, a Portuguese settlement on the coast of Africa, where this species is indigenous, afford plants that are more early and more fruitful, than those, which spring from seeds which have been saved at home. The Lisbon is next, in point of earliness and fruitfulness; some, indeed, consider it as merely the mazagan ripened in Portugal. The dwarf-fan or cluster-bean is likewise an early variety; it rises only six or eight inches high; the branches spread out like a fan, and the pods are produced in small clusters. The Sandwich-bean has been long noted for its fruitfulness. The toker and the broad Spanish are, likewise, great bearers. Of all the large kinds, the Windsor is preferred for the table. Of this species, there are several subvarieties, such as the broad Windsor, Taylor's Windsor, and the Kentish Windsor. The long-podded bean is a great bearer, and is very much cultivated; there are several varieties of it, such as the early, the large, and the sword long pod. If the weather at this time be open, any of the above sorts may be planted. In cold situations, beans may be now planted on warm south borders; but in early situations, they may be planted in the open quarters of the garden. For the gardens of cottagers and artizans, we would recommend the mazagan and dwarf cluster, as occupying little room, or they may be planted between the cabbage-plants, which are now in the course of planting, or which have been planted the preceding autumn. Three beans may be sown between every two cabbages in the same line. If sown on an early border, sow in longitudinal rows, and not across it, for reasons given in the preceding article. Crops sown this month will, in most cases, be as forward in fruit, as those sown in November. If the ground be in good heart, it need not be dunged for this crop. Beans thrive best as a full crop in strong land, but of course, will be earlier in light soil. Be careful to entrap mice, which at this season are apt to commit depredations upon this crop.

The crops sown in October or November should now have the ground carefully stirred about them, in dry weather. If the weather be very severe, cover occasionally with the pea hand-glass recommended in the preceding article; but if that be not the case, they will be better without it.

PLANTING GARLIC AND ROCAMBOLE.

Garlic may still be planted, but November is the most seasonable month for that purpose. In planting garlic, divide the roots into parts. It will grow in any ordinary garden-ground, but best in light rich soil. A small quantity will be sufficient for most families.

Rocambole may now also be planted, in every respect as garlic; but if the soil be wet and heavy, it will be better to defer them both till next month

SOWING PARSLEY.

Parsley may be sown about the latter end of the month, in rows, as an edging to an alley, or walk. It will thrive in any ordinary soil, or situation; let the drills be half an inch deep, and if sown in an open space, let them be twelve or fifteen inches asunder. The curled sort is the best, and less likely to be mistaken for Hemlock (*Conium macculatum*), which bears some resemblance to the common plain sort, and is a deadly poison; many lamentable instances are recorded of the fatal effects of people using hemlock by mistaking it for parsley. This seed remains longer in the ground than that of any other culinary vegetable, before the process of vegetation commences. With the knowledge of this fact, the gardener should take it into his calculation at the time of sowing his crops, for without we know, with some degree of certainty, the length of time that will elapse from the sowing or planting, until the crop be fit to gather, we shall be apt to run wide of the mark, in providing a regular supply, or answering the demand of a particular season. To the young gardener, we cannot sufficiently urge the necessity of his keeping a regular journal, or day-book, not only of every sort of seed sown or root planted, but also of every operation began or finished connected with his profession. By a careful attention to this rule, he will soon become acquainted with the nature, duration, and use of every cultivated vegetable. Nor let him deem this trouble too great, for he will not be aware of the importance of such a journal, until he takes the charge of a garden on his own account; and then, and not till then, will he find, that he is not so perfect, as he imagines himself to be. The utility of such journals has been acknowledged by the most eminent men in the profession, particularly when accompanied by notes made in their juvenile years.

HAMBURG PARSLEY.

The roots of Hamburg parsley are used in soups, and may be sown in drills a foot apart, about the latter end of the month. As the roots penetrate to a considerable depth, the ground should be either trenched or deeply dug, in order to obtain the roots of a considerable size. This root is not in very great demand in families, therefore a small quantity should only be sown.

PLANTING ESCHALOTS.

Eschalots may be planted about the middle or end of the month, if they have not been planted in November, which is the best season for that operation. They require good rich light soil, and an open situation. Choose a piece of ground which has been dunged for the preceding crop, as they are apt to canker, and be infested with maggots, if planted in fresh dung. They may be planted in rows one foot apart, and the roots nine inches distant in the lines. If necessary to manure the ground, we have found the dung of pigeons or poultry the best, and least liable to breed grubs. Autumnal planting is, however, the best preventive.

SOWING SPINACH.

A little round spinach seed may be now sown on a small piece of ground, to be gathered soon in spring, as a substitute for the autumnal-sown crops. If the weather be favorable, sow a little at the beginning, and also at the end of the month. Spinach may be sown in drills between the crops of early peas, beans, or such like crops.

PLANTING OUT CABBAGE-PLANTS.

When the weather is open, lay out some ground for cabbage-plants: let some rotten dung be thrown on the ground, which should be well buried in, one spade deep, and properly mixed with the earth in the bottom of the trenches.

About the latter part of the month, if the weather be mild, and the plants strong, they may be removed, observing to plant them about three feet asunder every way, for the larger growing sorts; those of less size may be planted much thicker.

The sugar-loaf and early York cabbage, are the best to plant at this season; but any of the larger sorts may also be planted out at the same time.

Fill up the places of the plants that have died in the former plantations, or which have been destroyed by the weather or vermin.

On the same ground, where cabbages are planted in the spring, a thin crop of round-leaved spinach may be sown, which will be fit to gather in April, or the beginning of May. In this case, the seed must be sown broad-cast, but thinly, and raked in, choosing a dry day for the operation.

TRANSPLANT CABBAGES, &c. FOR SEED.

Transplant cabbages and savoys, &c. for seed: this work should be done generally in November or December; but where it was omitted, it may still be done in the beginning of this month.

The saving of culinary seeds is not the province of those, who have the direction of the gardens of the nobility and gentry, but to a very limited extent. It forms an extensive branch of the interest of the commercial gardener and seed-grower. The growing of seeds within the limits of an ordinary garden is, with few exceptions, very unprofitable; but where the gardener is in possession of any new, improved, rare, or valuable vegetable, it is of the utmost importance to save the seed, not only for his own future supply, but for the purpose of distributing it amongst his friends. Many seeds become spurious, in consequence of their flowers, being impregnated by the fertilizing pollen of other plants, nearly allied to them, and none more so than the *brassica* family. The seed-growers in many countries are so well convinced of this circumstance, that a particular individual grows only one sort of seed; whilst another grows a different sort, at a distance of several miles. Bees, the force of winds, and other causes, all tend to this hebridizing of many families, particularly of cruciferous plants. In the same garden, they cannot possibly be preserved genuine, or free from contamination, if more than one sort of a genus be cultivated for seed. Peas and beans are less liable to this objection, but the produce which they yield will not be repaid by the ground, which they occupy; and in all cases, unless for particular purposes, the trifling expense of their purchase from the fair dealer will be more than expended in their production. Seeds sown on the same ground for a series of crops, degenerate, and ultimately become unfit for use.

For the purpose of saving seed, let some of the largest and best full-grown cabbages, &c. be taken up in a mild dry day, and divested of the large outer leaves. If they appear wet, place them with their heads downward a day or two, in order to drain off any moisture before they are planted, which will prevent their rotting; or, in default of full cabbages, use cabbage-stalks, furnished with good full heads of strong sprouts, as they will answer the same purpose, both in regard to the goodness of the seed and its produce.

Let a dry open compartment, exposed to the full sun and free air, be chosen for planting them, and the readiest method is to plant them in trenches, as the ground is dug: the plants should be allowed to stand two or three feet distant from each other.

Dig the ground a full spade deep, and keep the trenches clear and wide. When the digging is advanced two feet from the end, then with the spade cut the edge of the trench even on the side that is dug, and inclining rather perpendicularly to the bottom; then set the cabbages in the trench, in a similar position, close to the ground which has been dug, with the bottom of their heads a little within the surface: and having planted one row, proceed again with the digging, laying the ground against their stalks and roots, and round the bottom of each head, continuing with the digging till advanced two or three feet from the row of plants; then prepare the trench as before, and so proceed till the whole be planted. They will shoot up into flower-stalks, and will ripen their seed in the following August.

CAULIFLOWERS.

Examine the frames in which young cauliflower plants have stood the winter, and of those that are withered, or damaged, let such leaves be picked off, allowing no weeds to grow among them. If the surface of the ground can conveniently be moved a little, it will be of great use to the plants.

In mild weather, let the plants have plenty of free air every day, by tilting the glasses, or by taking them entirely off, when the weather will admit: keeping them close down every night, and never opening them in frosty weather.

In very sharp weather, cover the glasses every night, and, if necessary, in the day-time, with mats, straw, or fern; also lay some litter round the edges of the frame, which will be of great service in preventing the frost from penetrating at the sides.

Cauliflowers under bell or hand-glasses should also have air every fine and mild day, by tilting the glasses on the warmest side; in severe weather, keep them close; in hard frosts, lay some long litter round each glass, which will prove of great shelter to the plants: but in mild fine weather, the glasses may be taken off every day, for a few hours; but they must be kept closely shut every night.

Look carefully once a week or oftener, if mild weather, over the cauliflower plants, as slugs will destroy many of them, the best way is to pick them carefully off with the hand. In severe weather, mice and rats will be apt to destroy them; recourse must then be had to poison and traps.

Cauliflower plants pricked into pots, stand the winter well, as by that means they may be removed from one place to another, as circumstances may require; and, being turned out with balls, when planted, where they are to remain, will greatly promote their future growth.

The following method of obtaining a crop of early cauliflower, a week or ten days sooner than those treated in the usual way, is recommended by an anonymous correspondent of the Gardeners' Magazine.

From a seed-bed which has been sown two or three days *after* rather than *before* the customary period, select a score or two of healthy plants; pot them singly into the smallest-sized garden-pots, in rich loamy compost; water and plunge them in a cold frame, shading for a short time, till they have taken root. Afterwards give air daily, drawing on the lights at night, and defending from severe frost with a mat or two; water frequently with tepid manured water, and keep clear from decayed leaves and weeds. Examine the state of the roots from time to time, and, as they become in the least degree matted, immediately shift into forty-eight-sized pots, with the before-mentioned compost, and replace them carefully in the same frame, attending to them as before. When the roots have nearly filled these last pots, shift into thirty-twos, and in due time, they will ultimately require twenty-fours, or if they have grown rapidly, even eighteens. After being firmly established in these, they may be removed into a vinery, peach, or other forcing-house, there to remain till the end of March or beginning of April, when they may be turned out into the open air, between the asparagus beds, or any other warm and sheltered spot. They will require to be put in pretty deep, and protected by hand-glasses, or at least by boughs of trees, that they may not suffer from the sudden transition of weather or inclement skies. It is hardly necessary to add, that the whole success of this mode of culture depends entirely on the plants receiving no check in any stage of their growth, either from want of timely re-potting, water, air, or sufficient protection from frost. While in the house, if not supplied with water in pans, they are very liable to button, and thereby wholly defeat the end in view.

CAPE-BROCCOLI.

Cape Broccoli, managed exactly according to the directions given for cauliflower, will come into use rather before that vegetable, and afford a variety for the table, at a season when vegetables are much in request. This method will prolong the season of the broccoli tribe during the greatest part of the year.

BROCCOLI.

If the crops of broccoli have been properly moulded up, according to the directions given in November, they can still be further protected from the effects of frost, by laying some bean-haulm, or other litter on the ground, amongst their stems, and then sticking the whole plot full of old pea-stakes, or other branches, in imitation of a natural coppice. The shade afforded by this simple process will greatly counteract the effects of sunshine succeeding severe frosts, which at this season, and in February particularly, are so hurtful to all culinary vegetables.

ARTICHOKES.

Artichokes, if not earthed up, or covered as directed in November, should not be neglected any longer, except the severity of the frost prevents the landing up; in which case, as these plants are liable to suffer by rigorous frosts, it is advisable to give some temporary protection, first clearing away the decayed and large old leaves, then applying a thick covering of long, dry, strawy dung, or mulchy litter, closely about each plant; but if open weather, it would be most expedient to earth them up; observing, preparatory to this operation, to cut away all the large and decayed old leaves nearest to the ground, then to dig between, and earth up the plants, as in November and December.

After they are earthed up, if the frost should prove very severe, it will be proper to lay light dry mulch or long litter over the rows: if the plants be of the true globe sort, too great care cannot be taken to preserve them; for sometimes a severe winter makes great havoc among them; and, in spring, young sets to recruit the plantations are often very scarce.

EARTH UP CELERY.

Take the advantage of a dry day before the setting in of frost, to earth up celery that requires it. But this had better be deferred, if the plants be not quite dry, for if earthed up, when wet, they become cankered, and many will consequently be unfit for use. The earthing up of this crop, if properly done at previously stated intervals, and never allowing them to shoot too far without mould, will render any further earthing up (that is, for full grown crops) unnecessary, as they will blanch when taken into the shed, or cellar, and buried among sand to within a few inches of their whole length. But for successional crops, let the earth be well broken, and laid up to the plants lightly, that they may not be crushed down nor bruised, raising the earth very near to the top of the plants; for if severe frost sets in, it would destroy, or at least greatly damage such parts as are above ground, and would occasion a great part of the interior to decay or rot downward.

As these plants are required for use every day, if the ground be frozen hard, they cannot be easily taken up: therefore, at the approach of severe weather, either cover some of the rows with dry long litter, which will prevent the ground from being frozen, and will also protect the plants; or, a certain number may be taken up in a dry day, for the service of the family, carried into a sheltered place, and there laid in dry earth, or sand till they be wanted for use.

MUSHROOMS.

Mushroom-beds should be carefully attended to at this season. They should have sufficient covering to defend them effectually from the frost, rain, or snow; and such covering should not be less than twelve inches thick; should heavy rain or snow have penetrated quite through the covering, it must be removed immediately, or the spawn will be in danger of perishing. Replace it with a good covering of clean and dry wheaten or other straw; and in order to defend the bed more effectually from wet and cold, it would be advisable to spread some large garden-mats or canvas cloths over the straw, which will greatly preserve the beds. The cheapest and most effectual covering for mushroom-beds is Dutch reed-mats, which are capable of throwing off the rain more effectually than any other material of equal price. Their lightness, and the facility with which they are rolled up, give them a decided advantage, independently of their durability, which is much greater than that of garden-mats or straw, and much less troublesome. They can be procured from Holland very cheap, and are to be had of Mr. M'Kay, of the Clapton nurseries, who imports them annually from that country. The Dutch gardeners make use of them for their general covering; and for the purpose of covering frames, pits, or low houses, they are far superior to any other in use.

Mushroom-beds may now be made: they will afford a full crop in spring and beginning of summer, though probably not so successful as the autumnal-made beds. See *September*, for the method of making and spawning the beds, &c.

SEA-KALE.

For the general management of sea-kale, see *November*. The practice there recommended is equally applicable to the present month.

ONIONS.

In light soils, the months of August, January, or the beginning of February, are the proper seasons for sowing onions, with the view of obtaining a plentiful crop; but if the soil be heavy, March, or early in April, is to be preferred. If the ground be not in a dry state, onions should not be sown this month; nevertheless, the opportunity should not be lost, whenever the ground will admit of it.

LETTUCE.

If the weather be mild and dry towards the middle or the latter end of the month, lettuce may be sown. A rich light soil, and an early warm spot are to be chosen. The brown Dutch, hardy green, white cos, and green cos, are the kinds most proper for this sowing, and for the purpose of procuring plants for transplanting in March. Let the seed be sown rather thickly; let it be lightly covered, and raked in smoothly and neatly: the seeds must not be trodden nor beaten in.

It will be necessary, in order to ensure a supply of spring lettuce, to sow a small quantity of the above sorts on a slight hot-bed towards the end of the month, and when sufficiently stout, should be hardened by exposing them to the air by degrees, until they be strong enough to stand unprotected: a box with three lights, if properly managed, will afford a supply that will be sufficient for an ordinary family. It is not advisable to sow any thing along with them, as it would tend to draw them up too slender.

Care of the various Sorts of LETTUCES *sown in Autumn.*

If the lettuce-plants be in frames, or under hoop-arches defended with mats, let them enjoy the open air, whenever the weather is mild and dry.

But in very wet weather, and when sharp cutting winds prevail, keep the glasses or mats over them, observing, however, to raise them two or three inches in mild days, to admit air to the plants; for if they be kept too close, they will be drawn up weak, and attain to little perfection; let the glasses, however, be closely shut every cold night. In severe frosty weather, keep them close night and day, and cover the glasses with mats, or straw, &c. Where any cos-lettuces are pricked out in a south border, closely under the wall, it would be advisable in hard frost, to cover them also; pick off all decayed leaves when any appear; keep the plants clear from weeds; destroy slugs; and in mild weather stir the surface of the earth between, which will much invigorate the plants.

SOWING SMALL SALADING.

Cresses and mustard may now be sown on some sheltered dry border at the bottom of a wall or pales. But where there is the convenience of a common garden-frame, it will be better to sow either under it or hand-glasses.

The most certain and least troublesome method to keep up a supply of small salading at this season, is to sow the seed in flat boxes, or pans, in decomposed or rotten tan, or any other light vegetable matter, and place them either in the cucumber pits or frames, or in the hot-houses over the flues, or in any other place not too much shaded, and unoccupied with other plants; attending to sow every second or third day, according to the consumption. The same mould will produce a number of crops without being renewed.

MINT.

At this season mint is in demand for salads and sauce, &c.; let a few pots be placed in any of the forcing-houses now at work.

ASPARAGUS.

For forcing of, see *Forcing Garden.*

FRENCH BEANS.

For forcing of, see *Forcing Garden.*

RADISHES.

About the beginning, or any time this month, when the weather is open and mild, sow some short-topped radishes to come in as an early crop on a warm border, sloping towards the sun, and under a wall or other fence, and towards the middle or latter end of the month sow a crop of salmon radishes to succeed the short-topped.

Never mix the seed of both sorts, but let each sort be sown separately; for the short-topped will come into use sooner by a week or ten days than the salmon radish, even if both be sown at the same time; besides, the latter kind runs more to leaf than the former.

The best method is, to sow a little of the short-topped kind at least twice this month, in the beginning, and middle; and sow some more about the latter end likewise, on the same situation.

A little carrot-seed may be mixed and sown with the radish-seed, for if the radishes should fail, the carrots may still succeed; and, if both succeed, a double advantage will be obtained; for when the radishes are pulled up, a crop of carrots still remains, which will come in at a very early season: or instead of the carrots, a small quantity of round-leaved spinach and some lettuce may be sown, and when the radishes come off, these will come in. This is the common practice of the London gardeners, and is generally successful.

Sow the radish-seeds tolerably thick at this season; for as soon as the plants begin to appear, the weather, if it should prove severe, will cut off some, and the birds also being apt to attack them greedily, will destroy the rest; sow the seed evenly on the surface, and either rake it in, or cover it with fine earth from the alleys, about half an inch deep; observing, that if the weather should set in frosty after the seed be sown, it will be of great advantage to spread some dry long litter over the beds two or three inches thick, which will keep out the frost, and forward the vegetation of the seed.

When the plants begin to appear, proper means must be used to protect them from the frost and birds, by spreading straw, fern, or thin mats over the surface, there to continue till the plants have attained a proper size: and if the weather prove severe after the plants appear, cover them also occasionally with straw, &c., which will be a great protection from the injury of the frost; and if carefully laid on and taken off, it will neither break nor hurt them, using a fork in laying it on, and a light wooden rake to draw it off into the alleys, where it must be suffered to lie ready to throw over the plants every night, and even in the day, as occasion may require; the covering should be applied every night, when there is any likelihood of frost, but must be kept off in fine weather. The covering of early radishes should be continued occasionally, until the rough leaves of the plants have appeared. This is the common practice of gardeners, who thereby have them ready to draw for market in March.

PLANTING POTATOE-ONIONS.

If the potatoe-onions have not been planted in December, they may be now planted if the weather be open. For which, see *December*.

WORK TO BE DONE IN THE CULINARY GARDEN.

All vacant pieces of ground should at this time be either trenched or deeply dug, according to the purposes for which they may be intended; but this should not be done, if the ground be wet, or if snow be lying on it. The rougher the surface can be made, whether the ground be trenched, or dug, the better. If dug, it is better to form it into ridges of any convenient size, so that the frost may act upon as large a surface as possible. The gravel-walks of the culinary garden should be dug up, and the gravel left in a neat ridge in the middle of the walk, leaving the sides as smooth as possible for the convenience of wheeling upon: this will destroy the roots of the weeds; and if the gravel be again laid down in March, the walks will have a neat and clean appearance for the season. The several heaps of composts, dung, &c., should in frosty weather be turned over, and well mixed, to render them fit for use when they may be wanted in the spring or summer.

If there be any hedges of any kind, evergreens excepted, in the kitchen-garden, or surrounding it, they should be now cut, so as to leave as little to do in the succeeding months as possible, that can, with propriety, be done in this. Pea-stakes should be drawn to the garden, and made and neatly tied up in bundles; it will save time when they may be wanted in spring. The outer fences of the garden, if hedges or pales, should be examined now, and put in repair, if necessary. In bad weather, labels of all sorts ought to be made, and numbered and laid up so as to be conveniently at hand when wanted. In the gardens of cottagers, &c., the ground should be turned up, and the fences repaired; any manure that can be collected by the road-side, or other places, should be now carefully attended to, and if the cottager be unemployed, his time cannot be better spent, than in wheeling into his garden any old banks by the sides of roads, or other waste places, where permission can be obtained. It will much improve his soil if it be laid on the ground, and left to pulverize till the following month or March, when it should be dug into the ground along with any other manure, which he may be able to procure from his pigs, or the ashes of his fire.

Where the nature of the ground requires draining, this is the season to have it done; if that very necessary process has been neglected in the formation of the garden, no time should be lost; and in making the drains, it may be observed, that the nearer they are to the surface, the better, in order that they may be filled with stones or other materials. A regular plan of all drains should be kept in the gardener's room, and all alterations or additions carefully and accurately inserted. This will prevent confusion at any time, that it may be deemed necessary to examine or repair them. In bad weather, the garden-implements should be examined, and such as require it, put in proper repair, and where any are wanting, let them be sought after, and replaced. However trifling this may appear, it will save much time and expense, at the time when they are wanted for use.

We would here recommend, as a rule adopted by ourselves during the whole course of our practice, to give an inventory of all seeds, tools, &c., connected with the culinary garden, into the hands of the kitchen-garden foreman, or under-gardener, and that he give to each of his men the proper tools for the particular employment allotted to him, and to make every man responsible for them. Each gardener should have a full set of tools; he should consider them his property, while he is in the employment, and when one is broken or worn out, by reporting it to his foreman, he must be supplied with another.

A tool-house is an appendage attached to almost every garden, from the nobleman's to the tradesman's villa; but it is, generally speaking, a name only, and more often filled with useless lumber, than implements of horticulture. Nothing shows the want of regularity and system, and consequently bad management, more than to see a spade lying in one place, a rake in another, and a wheelbarrow in a third. We would recommend that every operative be compelled, on quitting his work, to carry such of his tools, as he may have been using into the tool-house, where they should be properly cleaned, and either placed upright or hung upon nails, according to their respective kinds; and this house should be regularly locked by the foreman, and opened by him in the morning. A system of regularity of this sort will prevent altercation, and in a short time will cease to be unpleasant to the men; they will perform it as mechanically, as they do most of their other duties. At this season, the store-house should be examined; all bulbs, onions, and roots carefully looked over, and those in a state of decay removed to prevent contamination. Every attention should be paid to such things as are liable to be injured by frost, in order that they may be protected in time, for if deferred too long, an irreparable loss may be the consequence. Where there is much wheeling to do, this is the proper season to perform it, as during frost, the men will do more at this work, than they can accomplish, when the walks and ground are soft. Leaves should be collected in the woods for the purpose of undergoing fermentation, either for accelerating crops or fruits; or if not wanted for such purposes, they should be gathered in heaps to rot into vegetable mould, which will always be useful in the kitchen-garden, and in the other gardens it is actually indispensable.

FEBRUARY.

SOWING PEAS.

A full crop of charltons may be sown about the beginning, and of marrowfats and other larger sorts towards the end of the month, in the open quarters of the garden. It frequently happens that the fruit of a sowing made the beginning of this month, is not a week later than that of a crop sown in November, and often surpasses all that have stood the winter in forward returns, as well as in quantity. For small families, tradespeople, and cottagers, the middle of February is the best time for sowing to obtain an early profitable crop; and, in many situations, the ingenious gardener is unable to bring peas to table sooner by any means which he can adopt in the open air, than from the crop sown the beginning of February. From the middle of this month, make successive sowings every three weeks during the months of March, April, and May; and twice in each of the months of June, July, and August; reducing the quantity each time from the end of June till the middle of August. The crops of the later sowings will depend on the state of the weather during the following autumn, and in general, they are small and scanty. For the early and dwarf crops sown in the beginning of the month, from three to four feet will be plenty between the rows, and three inches deep. If the ground be wet, do not tread the seeds in; but if perfectly dry, a slight treading will prevent them from being displaced in the operation of covering. Sow peas of sorts in pots or flat boxes, according to the plan recommended for beans; if for extensive crops, sow on a slight hot-bed. This has been practised by Mr. Bishop, an intelligent and experienced gardener, and is the most rational plan of transplanting peas ever practiced.

PLANTING POTATOES.

Potatoes may be planted about the middle, or towards the latter end of this month, if the weather be mild.

These roots are propagated by planting them, either whole or in pieces. The better practice is to procure tolerably large roots, and to cut each into two, three, or more pieces, observing that every piece be furnished with one or two buds, or eyes.

They are to be set in rows, a foot and a half or two feet asunder, a foot apart from each other in the row, and about five or six inches in the ground.

Potatoes may be planted progressively as the earth is dug or ploughed, by placing them in the trenches or furrows, allowing them the distance above-mentioned; or they may be planted with a dibble, after the ground is dug; but for the particular manner of planting these roots, see the *Culinary Garden* for *April.*

TRANSPLANTING CABBAGES.

The early sugar-loaf cabbage, and other cabbage-plants, should be transplanted this month, where they are intended to remain.

Where the plants are pretty strong, they may, in mild open weather, be planted out the beginning of the month; but if they be weakly, or much hurt by the frost, they should not be planted out before the end of this month, or the beginning of the next.

Choose a piece of good ground for these plants, in an open situation, and let some rotten dung be dug in. Set the plants in rows, two feet and a half asunder, and allow the same space between the rows.

SOWING CABBAGES.

Sow cabbages about the middle or latter end of the month, for summer and autumn use. These will be fit to cut in July, August, and September, &c.

But if the winter has destroyed many of the plants, which were sown the preceding August, it will be proper to sow some of the early seed as soon in this month as the weather will permit; and if a few be forwarded by sowing them in a slight hot-bed, it will be a great advantage. For the earliest crops of cabbages, allot some of the small early dwarf, early dwarf York, East Ham, and sugar-loaf, for cabbaging in April, May, and June: secondly, raise more considerable quantities of the middle-sized kinds, particularly the large York, and large sugar-loaf, or the Battersea, Penton, Imperial, Antwerp, Russian, &c. for general summer crops; choose the larger latter sorts, for succession during the summer and autumn. The large hollow sugar-loaf, oblong hollow, long-sided hollow, and large round winter (white) are excellent for full cabbaging in August, September, and October, till Christmas: any of the middle-sized varieties may be sown for latter succession crops in summer and autumn, to cut when young. The large round winter cabbage, great drum, Scotch, and American kinds, are more adapted for field-culture, to feed cattle in winter, &c.

Sow also some red cabbages for next winter's supply.

Cabbages and savoys for seed may be planted this month, if not done before. Take up the plants in a dry day, clear off all the large leaves, and plant them two feet asunder each way, according to the method explained last month, placing them so deep, that no part but the head may appear above ground.

SOWING SAVOYS.

Savoy seed may be sown, for the first crop, about the middle or latter end of this month. Those savoys which are now sown will be ready in September, and they will be finely cabbaged by October, and continue in good perfection all November and December, &c.

EARTHING UP CABBAGES.

Attention must now be paid to the cabbages, which were planted out in the October of the preceding year; if the weather be dry, the ground should be well stirred about their roots with a hoe, drawing up at the same time some mould about their stems. This will invigorate the plants, and tend to promote their growth.

MANAGEMENT OF CAULIFLOWERS.

Cauliflower-plants in frames should have plenty of air every mild day, by entirely removing the glasses.

Towards the end of the month transplant some of the strongest plants into the place, where they are intended to remain. Plant them in a rich spot of ground, allowing them thirty inches, or a yard distant each way. It will be necessary to choose a sheltered warm spot for this crop, and also to shelter them occasionally.

Cauliflowers under hand or bell-glasses, should also be thinned out, where there is a superfluity; that is, if there be more than four plants under each glass, all above that number should be removed. Observe to draw up the weakest, and let four of the strongest remain under each glass, and raise some earth up round their stems at the same time. The plants which are taken up should be transplanted to another sheltered spot of ground, allowing them sufficient room to come to perfection.

In removing cauliflowers, it is common with those gardeners, who are obliged to make the most of their ground, to sow, on the same spot, a crop of spinach and radishes, which turns out to good account, without in the least injuring the growth of the cauliflower-plants; for by the time they begin to advance towards perfection, the radishes and spinach will be all taken up for use.

Sow cauliflower-seed the first week of this month, to raise some plants to succeed the early crop; but in order to bring the plants up early, and to forward them twelve days or a fortnight in their growth, it will be well to sow them in a moderate hot-bed.

Make the bed about twenty inches or two feet thick of dung, on which put a frame; then lay four or five inches in depth of rich earth over the bed.

Sow the seed on the surface, cover it with light rich earth, about a quarter of an inch thick, and then set the glass on.

As soon as the plants appear, let them have air every day, by tilting the glass a considerable height; and in mild weather, the lights may be taken quite off in the day-time, for they must not be kept too close, as that would cause them to grow up weak.

But where there is not the convenience of a frame for the aforementioned bed, cover it at nights, and in bad weather, with mats, placing hoops, long sticks, or poles, arch-ways across, and over these lay the mats, or Dutch reed-mats, as already recommended.

Sprinkle them with water occasionally, if moderate showers of rain do not happen about this time, but not so as to create too much damp.

PLANTING BEANS.

Any of the beans recommended last month may be now sown, and the sooner in the month the better. In this, and in all other cases connected with planting and sowing, the exact time must be regulated by the state of the weather, and the nature of the soil. In light sandy soils, sowing and planting should be done as early as possible; and in wet strong soils, the seeds are better in the seed-room than in the ground, when it is not in a proper state to receive them. A few of the early sorts may be planted in the beginning of the month, and the larger growing sorts towards the end. As the plantings done this month will be for principal summer crops, the quantity planted should be in proportion to the demand. The long pod and Windsor sorts are to be preferred for the last crops planted this month. Plant in lines three feet asunder, and four or five inches apart in the line. For the gardens of cottagers and artizans, the middle-sized sorts, such as the long-pods, broad Spanish, and white-blossomed beans, are to be preferred, as they are great bearers, and occupy less room than some of the other sorts in cultivation. About the beginning of this month, plant beans in pots or flat boxes, and place them in any of the hot-houses at work, or in a hot-bed frame. When they appear above the surface, remove them to a colder place, so as to harden them by degrees to fit them for transplantation next month. Beans are so much improved by being transplanted, that the practice ought to be more generally adopted than it is. In sowing beans for transplanting, observe to place small pieces of turf, three or four inches broad and six or eight inches long, under the mould in which they are sown; for by this means, they will transplant with better balls, and the roots will be less liable to be injured.

EARTHING UP BEANS.

Take advantage of a dry day, to stir up the surface with a rake among beans that are now above ground; and if sufficiently above ground, draw a little earth to their stems.

SOWING CELERY.

About the middle or end of the month, prepare a small bed of light rich earth in a warm sheltered situation, in which to sow some celery-seed for an early crop.

Break the mould very fine, as the seed is small, and rake the surface even; sow the seed, but not too thick, and cover it with light rich mould, about a quarter of an inch deep.

Those who wish to have the plants come in early, should sow the seed in a slight hot-bed, or in flat boxes in any of the forcing-houses that may be at work, to be afterwards hardened by degrees, by removing them from one colder department into another, until they be fit to stand in the open air, when they may be pricked out into a warm border, or upon a slight hot-bed, to remain until finally planted out.

The plants raised from this sowing come into use about the middle of July.

There should not be many of these early sown plants pricked out, but only just a sufficiency to come in before the general crop; for they will soon pipe and run to seed.

SOWING CARROTS.

About the middle or end of the month, carrot may be sown for an early crop, on a light border or other sheltered spot; but the beginning of April is soon enough to sow the principal crop. The seed may either be sown broad-cast, or in drills, but the latter is to be preferred. If broad-cast, strew as equally as possible, cover lightly, and rake all smooth. For the more regular division and separation of this seed, let it be well rubbed between the hands, mixing it up with dry mould, or sharp sand. Crops of such seeds as carrot, and some others, will at this early season be much benefited, if the drills in which they are to be sown, be half filled with light vegetable mould, on which the seed must be sprinkled, and then covered with the same sort of mould. In strong wet soils, this should be particularly attended to, as seeds will vegetate quicker, and become established much sooner, than if sown in the natural ground. If in drills, let them be shallow; half an inch in depth is enough; and ten or twelve inches apart. Cover with the hoe or rake, and dress the surface fine. See *April.*

The Alteringham is the fittest for this sowing, a little early horn may also be sown, but the other is equally early, and a much better carrot.

PLANTING GARLIC AND ROCAMBOLE.

If these were not planted in January, the present is a good time. Dig the ground deep, and break it fine, if of a tenacious quality. Neither of these roots is much used, so that a small piece of ground will afford an ample supply for an ordinary family.

PREPARE GROUND FOR SOWING ONIONS.

Take advantage of a dry day, provided the ground be not naturally wet, nor rendered so by continued rain, to point over the ground, which has been manured and rough dug in autumn, which by this time will be well pulverized by the continued action of frost and rains upon it. Point it over six inches deep, and break it well with the spade. If no ground have been purposely prepared in the above manner, make choice of a rich piece, which has been properly manured for the preceding crop; that which has been occupied by celery, will answer the purpose well; dig it slightly, and break the clods as finely as possible. If there should not be a piece of ground in sufficient good heart to spare, make choice of another; and if it be deemed necessary to manure it, prefer a compost of decomposed stable-dung, cow-dung, and earth, for any compost is preferable to simple dung, as being less likely to breed maggots.

The latter end of this month may be considered as the proper time to sow a full crop of onions, if the land be of a middling texture; but if it be wet and heavy, we would recommend to defer the sowing till the subsequent month, or the first week in April. Any of the following sorts may be sown at this time, the Strasburg, Deptford, Spanish, Portugal, the silver-skinned, red-skinned, &c.; the two former, however, which are considered by some to be the same species, produce the most abundant crops, and are allowed to be the best keepers.

Sow any of the above-mentioned kinds in four feet beds, thinly, and cover to the thickness of a quarter of an inch; or in shallow drills, nine or ten inches apart, also thinly. The drill system is to be preferred, both for neatness and utility, as by this method, the crop can be hoed, which will destroy the weeds, and by occasionally stirring the surface, greatly promote the growth of the plants, particularly when the bulbs are swelling. A little lettuce or celery-seed may be thinly sown along with them, but this must be done sparingly.

Rake all smooth, but in neither case must the seed be trodden in, unless the ground be very dry indeed. Onions intended for pickling should be sown in poor ground, or under the shade of trees, to keep them small. The Strasburg is generally sown for principal crops, and next, the Deptford; the small silver-skinned and two-bladed are the best for pickling. The Portugal and Spanish yield large crops for early use, and should, in cold situations, be sown in March. The Strasburg is hardy, and stands the winter, if sown in September, or the latter end of August.

WINTER CROP OF ONIONS.

The crop of winter onions, or that which has been sown in the end of August or beginning of September, should now be gone over about the end of the month, and cleared from weeds;

if needful, they should be regularly thinned. Let the surface be well stirred up among the plants. If green onions be in demand for the use of the kitchen, they need not be much thinned at this time, but rather delay the final thinning till April or May. (*See those months.*)

SOWING PARSLEY.

Parsley may again be sown for successional crops; prefer always the curled sort, as being more luxuriant and handsome for garnishing, and is not likely to be mistaken for those poisonous plants, fool's parsley, *Aethusa Cynapium*, and common hemlock, *Conium maculatum;* both are common weeds growing in gardens, and have often been mistaken for parsley. The leaves of fool's parsley may be easily distinguished from the genuine parsley, being of a darker green, of a different shape, and instead of the smell peculiar to parsley, have, when bruised, a disagreeable odor. When the flower-stem of the fool's parsley appears, the plant is at once distinguished, by what is vulgarly called its beard, consisting of three long pendant leaflets of the *involucrum.*

HAMBURG PARSLEY.

Hamburg parsley may be sown in drills one foot asunder, and two inches deep. It will thrive well in any ordinary garden soil, which is of sufficient depth, and not over rich.

BEET.

A small quantity of red beet may be sown to come in early for salads, and a little of the green and white sorts for their leaves in soups and stews. But defer the principal crops of beet till April; if sown sooner it is apt to run to seed, or at least to become hard and stringy.

CHIVES.

Chives are used by many, both in the kitchen and in salads, and are a substitute for spring-onions. They will grow in almost any soil, and are easily propagated by sets. They may be planted in rows, eight or nine inches asunder, and four or five in the row. Any time in this month, or in March, will be proper for planting.

SOWING SPINACH.

At the beginning of this month, spinach of the round sort may be sown on an open spot, and also for successional crops at the end of the month. The winter crops must now be hoed and cleared, and although entirely free from weeds, yet the earth should be stirred about the plants. If these crops have been sown broad-cast, they should be thinned out to eight or nine inches square, and if in drills, to three or four inches between the plants. Spinach, managed according to this system, will, if in rich land, produce a fine large leaf, and a much more abundant crop than if left unthinned, which is too frequently the case. Fine weather must be chosen for this purpose, and the surface must be well loosened among the plants, particularly if the soil be of a stiff nature, and the ground have been much affected by heavy rains, or trodden upon during winter.

Spinach requires a richer soil than almost any other culinary vegetable to bring it to perfection, as it has to yield frequent gatherings or cuttings, and therefore requires a repeated development of parts, which cannot be expected without an abundance of food. The finest crops of this vegetable may be expected from ground glutted with manure, so far as the attainment of bulk of vegetable matter is concerned.

LEEKS.

Leeks should be sown in a bed of rich land, and moderately thick, as they must be afterwards transplanted.

MUSHROOMS.

Be careful that the mushroom-beds be well protected from heavy rains and frost; either of which would destroy the spawn.

The covering of straw should not be less, over every part of the bed, than twelve or fifteen inches thick. If the wet have at any time penetrated through the covering, let it be removed, and fresh dry covering put on. If covered with Dutch reed-mats, rain will seldom injure the beds, as they are capable of throwing off the water much better than garden-mats.

PARSNIP.

Prepare a piece of ground by trenching eighteen inches or two feet deep, on which the parsnip-seed is to be sown. The parsnip is a native of the chalky downs of Kent and Hampshire, the roots of which penetrate to a great depth in the almost solid chalk. In garden-culture, it will be found to attain its greatest perfection in ground rendered sufficiently deep by trenching, and manured with chalk or lime. It is found in great perfection in cottage-gardens in chalky countries, and should be cultivated by cottagers as a wholesome and nutritious food. The parsnip is an excellent root, and in soils suited to it will, under good management, yield a great weight of food, either for man or for cattle. It is grown to greater perfection in the islands of Guernsey and Jersey than any-where else, and is thence often imported into this country.

HORSE-RADISH.

This plant is propagated by cuttings of the root, either taken from the top an inch or two long, or some old roots cut into pieces of that length. It is so tenacious of life that almost every inch of the root will grow, and when once established in a piece of ground, is not easily eradicated.

To propagate it, procure a number of proper sets, which may be either the small off-sets that rise from the bottom or sides of the main roots, and of which take cuttings of their tops two or three inches long; or use the tops and crowns of the old roots when taken up for use, in cuttings of the above length: or in default of a sufficiency of crowns or tops of either, divide a number of old roots into cuttings of the above-mentioned length, which if furnished, each with two or three buds or eyes, will make tolerable sets: but preference should be given to the cuttings of the crowns or tops, if a proper number can be procured; observing that when intended to make a fresh plantation, you should, during winter, when the plants are taken up for use, reserve all the best off-sets for planting; also the crowns of the main roots: but this latter is only practicable in private gardens; for where the large roots are designed for sale, their tops must not be taken off, which will render them unsaleable in the market; therefore the market-gardeners always reserve the strongest off-sets arising either from the bottom, or emitted from the side of the main root.

Being thus furnished with a proper number of sets, trench the ground to the depth of two feet, and add a slight body of manure; plant the sets in with the spade or large dibble, rake the surface smooth, and sow it with spinach, if such should be wanted. As horse-radish is a coarse growing vegetable, and not always easily kept clear of weeds, in consequence of its roots running in all directions, which would be apt to be injured by digging or hoeing, it would be adviseable to plant it in some part of the slip, or outer parts of the garden, where it may be seen as little as possible; nevertheless, plant it in a situation where it will not be under the shade of trees.

In taking up these roots, it should be done regularly, not taking up a stick or root here and there, as we often see done in private gardens, but beginning at the first row, and proceeding from row to row, as it is wanted.

THINNING THE CROPS OF WINTER LETTUCE.

The crops of winter lettuce should now be thinned, and the ground between the plants hoed and stirred; this will greatly encourage the growth of the plants.

SOWING AND PLANTING LETTUCES.

About the beginning or middle of this month, if the weather be mild, sow several sorts of lettuce-seeds on warm borders. The white and green cos, and the Silesia and cabbage-lettuce, are proper sorts; also sow some of the imperial and brown

Dutch lettuces, or any other sorts; let the seeds be sown moderately thick, and rake them in regularly.

Or, in order to have a few lettuces forwarder for transplanting, sow lettuce-seeds early in the month in a frame, and cover them occasionally with glasses or mats, at night and in sharp weather; and when the plants are advanced about two inches in growth, they are to be transplanted in the open ground.

Lettuces which have stood the winter, closely planted in warm borders or in frames, should, about the end of the month, if quite mild weather, be thinned out where they stand too close, leaving them a foot distant each way: the plants which are drawn out should be planted in an open spot of rich ground, a foot asunder; and a little water given as soon as planted.

We have experienced much success in planting lettuce at the bottom of a north wall, or in any such situation, where the sun seldom shone upon them till late in the afternoon. It is the sudden transition from cold to heat, or of sunshine upon vegetables after severe frosts, that our early crops are destroyed in this uncertain climate. It ought to be our study to dispose of and shelter them, as much as possible, from the effects of such transitions. It is also of importance, particularly in autumn-planting, to throw up triangular ridges, two or three feet high, of convenient lengths, from east to west, and to plant both sides of the ridge with lettuce-plants. In this case, if the plants upon the side sloping towards the sun should be destroyed, those on the opposite side will have a chance to stand. Should both stand, this method will prolong their season, as when the crop on the south side is exhausted, that on the opposite will be fit for use.

PLANTING ESCHALOTS.

If eschalots were not planted in January, now is the proper season for that purpose, ample directions for which will be found in the preceding month.

RADISHES.

Dig a warm border, the beginning of this month, for some short-topped radish-seed, to succeed those sown last month. Dig another piece at the same time, and sow it with salmon-radish-seed; they will succeed the short-tops. About a fortnight or three weeks after, let some more of both sorts be sown in an open situation, in larger portions for the main crop, that there may be a regular and plentiful supply in the proper season; also sow a little of the red and white turnip-radish for variety.

PLANTING LIQUORICE.

Prepare some ground to plant liquorice where required; the ground should have two or three spades' depth of good soil, and also trenched the same depth, that the root, the only useful part, may run very deep into the earth.

Procure sets of the small horizontal roots, which run near the surface of the ground; cut them into lengths of six inches, and plant them by dibble, in rows a yard asunder, by half that distance in the row, placing them wholly within the earth; as soon as planted, sow a thin crop of onions on the same ground the first year. Keep them clean from weeds all summer; and when the onions come off, hoe the ground well; and in winter slightly dig the ground between the rows.

They must be permitted to have three years' growth, cutting down the decayed stems every October or November; and in the third or fourth year, the main roots will be of full length and size; then dig them up in winter, beginning at one end of the ground, and opening a trench quite to the bottom of the first row of roots; so continue row and row, taking out all the roots as you proceed to the bottom.

WORK TO BE DONE THIS MONTH IN THE CULINARY GARDEN.

The process of trenching and digging should be continued, if not finished last month; and every thing there recommended should be done as soon as possible, as the following months are amongst the busiest of the year with the gardener.

MARCH.

PLANTING BEANS.

Plant beans of any kind, for all sorts succeed well from this time of planting; now plant full supplies of the best sorts for principal crops.

This is still a proper time to plant the Windsor, Toker, and Sandwich, and the long-podded bean, which is a great bearer. The smaller kinds may also be planted any time this month, being plentiful bearers; among which, the white-blossom kind is a peculiarly fine eating bean.

Some of the most approved of the above sorts put into the ground every fortnight, will afford a regular supply during the season.

Plant the large kind of beans in rows a yard asunder, and the lesser kinds, thirty inches between the rows. But, if it be intended to plant savoys or cabbage-plants between them, the rows, for all the sorts, should be a yard and a half apart.

Transplant the beans sown in pots or boxes, as previously recommended. Take them carefully out of the boxes, or pots, separate them so as not to injure the roots, draw drills four inches deep, place the plants six inches apart in the rows, and from two to three feet between the lines; fill in the mould round the stems, and give a little water, if the weather be dry, to settle the mould about the roots. Shade or protect them for a few days with branches. The beans recommended to be sown thick in the borders in autumn, if they have stood the winter, should now be transplanted, as has been formerly directed.

SOWING PEAS.

Sow marrowfat peas once a fortnight or three weeks at farthest, particularly some dwarf green imperial marrowfats, which are a most excellent eating pea.

Or, in sowing peas, it is a good rule, when the plants of a former sowing are coming up, to sow another crop of the same sort, which will succeed the others in regular order of bearing.

Any of the larger or smaller kinds mentioned in the former months, may be sown for general crops. Draw drills at the distance mentioned in February, sow them regularly, and cover them with earth about an inch and a half deep.

All the sorts should now be sown in open situations, not under low spreading trees.

Transplant the peas which were sown last month on hotbeds, or in flat boxes; they will, if attention has been paid to them, be hardy enough to transplant, if the weather be tolerably mild. In doing so, make shallow drills with a hoe or spade; then remove the peas carefully in patches, which will not be a difficult task; the pieces of turf which were recommended to be placed under them, will readily separate, and each piece should be carefully placed in the drill prepared for them, with the peas growing upon it. Cover the peas to within an inch of their whole height with light mould. If the weather be dry, give a little water to settle the mould about them; if frosty, protect them for a few nights with branches, or any other slight covering.

EARTHING AND STICKING PEAS.

Draw earth to the stems of such peas as have attained some height; it will strengthen the plants greatly, and encourage their growth.

Stick peas as the different crops advance in growth, six or eight inches high.

TRANSPLANTING AND SOWING CAULIFLOWERS.

Remove the cauliflower-plants, which have been in frames, or on warm borders, during the winter, if not done in the former month.

Let these be planted in a good spot of ground, which should be well manured with some good rotten dung, and then neatly dug or trenched, one spade deep; bury the dung in a regular manner in the bottom of the trench. Plant the cauliflowers in rows thirty inches apart, allowing them the same space between plant and plant.

The spot, where this crop of cauliflowers is planted, may be sown with spinach and radishes, as was intimated last month.

Raise some earth to the stems of the plants, which are under hand or bell-glasses; it will strengthen them and assist their growth.

The glasses may still be kept over the plants, but must be continually raised, at least a hand's breadth high; or in fine days, the glasses may be taken off, and let the plants have the benefit of warm showers of rain.

Where cauliflower-plants have been raised from seed sown the last month, they should now be removed into a bed of good earth, in a warm situation; but where a moderate hot-bed can be obtained, it will be most advisable to prick them into it, which will forward them greatly. Make the bed about sixteen or eighteen inches high, and set a frame on it, or arch it over with hoops; lay on half a foot of rich earth, prick out the plants in it, two or three inches apart, and give them a little water. Set the glasses or other covers on every night, but remove them every mild day.

By placing out the plants on a moderate hot-bed, it will bring them forward to be fit to transplant the middle of April into the place where they are to come to maturity, and they will produce their heads in July.

Cauliflower-seed may be sown early in this month, if it were not done in February; observing to sow it in a moderate hot-bed, as was then directed; it will bring the plants up soon, and assist them greatly.

The seeds may be sown in a bed of good earth, in a warm situation on an open spot of ground; they will grow freely, but the plants will not be so early by ten or twelve days, as they would be, if the seed were sown on a slight hot-bed.

The plants from this sowing will come in for use in August.

SOWING BROCCOLI.

It will be early enough towards the middle or the end of the month to sow broccoli, for if sown earlier, the plants are apt to start or button. The early white, the tall purple, the green or the dwarf sulphur-colored kinds, are the best to sow; the seed must be sprinkled thinly, on a bed of light earth, and in a warm open situation; it must be covered to about a quarter of an inch in depth, and raked in fine.

TRANSPLANTING AND SOWING CABBAGES.

Transplant cabbage-plants of all kinds, into the places, where they are to remain to cabbage. It may be done the beginning, or middle of this month, but if the plants be strong, the sooner it is now done, the better. Let them be planted in good ground, well manured, at two feet and a half distant.

This distance is meant for such plants, as are to remain to grow to their full size; but such of the forward kinds as are to be cut young, may be planted closer; and eighteen or twenty inches distant will be sufficient.

Sow the seeds of cabbages of any kind, the beginning or middle of this month, particularly the early kinds for successional young summer-cabbages, and large sorts for autumn and winter use. The large sugar-loaf is a fine kind to sow now, also the Yorkshire, Battersea, and imperial, for midsummer and general autumn cabbages. A quantity of the large, hollow, long-sided, and large round cabbages, may now be sown for late autumn and general winter use: let the whole be sown in an open spot of good ground, each sort apart. In sowing them, let each sort be correctly labeled, which should be a rule with every seed that is sown.

The plants produced from this sowing will, particularly the early sorts, be well cabbaged in August and September, especially the sugar-loaf, Battersea, and Yorkshire kinds, and will remain good all the winter.

Red cabbage-seed should also be sown towards the latter end of this month, to raise some plants for winter use; they will be well cabbaged in September, or about Michaelmas, and keep good till the spring.

In sowing the several sorts of cabbage-seed, it will be most proper to sow them in open ground, at a distance from trees, fences, or buildings; for when sown in such close situations, as is very often practised, the plants are drawn up weak and slender, and are liable to be destroyed by vermin.

SALSAFY, SCORZONERA, AND SKIRRET.

Salsafy, Scorzonera, and Skirret, are all raised from seed, and are used in the kitchen, in autumn and winter. They may be sown about the end of the month, for if sown at an earlier period, they often run to seed, and are thereby rendered wholly useless.

SOWING SAVOYS.

Savoy-seed for a principal crop, to serve from about Michaelmas to Christmas, should be sown about the middle, or towards the latter end of the month, in an open situation.

But if it be desired to have savoys well cabbaged in the end of August, or any time in September, they should be sown in February, or at least the first week of this month. Savoys answer best on a light rich soil; poor or exhausted ground should be well manured. Allot an open compartment, that the seedlings and advancing plants may grow stocky, and not draw up weak and long-shanked, as they are liable to do in close situations or narrow borders under walls. Gardeners distinguish two chief sorts, green savoy and yellow savoy, and of each of which there are, round-heading, oblong-round heading, sugar-loaf heading, &c. The round-heading is the most permanent. In these varieties, there is no material difference, though the green has certainly the best appearance at table, and always proves the hardier, in standing long rigorous seasons: both sorts are, in general, hardy enough to stand our ordinary winters.

The seeds of this vegetable are possessed of the property of retaining their vegetating properties for six or eight years, provided that they were sufficiently ripe, when gathered; and we are informed by Bastien, that the seed-growers of Aubervilliers assert, from their own experience, that the seeds obtained from the middle flower-stem, will produce plants sooner fit for use, than those which have originated from seeds gathered from the lateral flower-stems. This curious circumstance has not altogether escaped the notice of some of our olden gardeners.

PLANTING POTATOES.

About the middle or latter end of this month, it will be proper to plant potatoes on a border, which is light and early. The ground need not be manured for this crop, if it be in a tolerably good condition; for as the produce is seldom allowed to arrive at its full maturity, the soil will consequently not be exhausted, which is the case only when the potatoes are allowed to remain in the ground until they be fully ripe. In those cases, however, where it is intended that the crops shall stand until they have come to maturity, it will be necessary to give the ground a good dressing of manure.

The ash-leaved and early dwarf, but particularly the former, are the best kinds to be planted at this season, as they require less room than any other kinds. They may be planted six or eight in a line, and about fifteen inches between each line. If the ground be in any degree wet or damp, they may be planted in drills about three inches deep; but if it be light and dry, they may be dibbled in. It must be observed, however, that this method is recommended only to save time, as the drill is to be preferred to the dibble for all kinds of seeds and roots.

Potatoes may be planted with propriety in ground which has been under the same crop the preceding year. This is, however, with a few other vegetables, an exception to the general rule of changing their situation annually. In Cornwall, the same ground that has borne a crop of early potatoes is frequently planted with a late or winter crop, and both are found to succeed to perfection. The same practice is not uncommon in Ireland, and many parts of Lancashire. In Cornwall, they always procure their seed-potatoes, either every year or every alternate year, from a granite soil, knowing from experience, that the great increase in the produce, justifies the additional trouble and expense.

SOWING BRUSSELS SPROUTS.

Brussels sprouts may also be sown any time in the month, and the same system adopted as directed for broccoli.

TURNIPS.

Sow turnips for a first early full crop about the middle or towards the latter end of this month, in an open situation, and where the ground is light.

Turnips may be sown at the beginning of the month, if required; but those sown so early are apt to run to seed before they bulb of any considerable size in the root.

If a little turnip-seed be sown the first week of this month, or the last week in February, on a slight hot-bed, the plants will be more likely to bulb before they show a disposition to run to seed, and will be an acceptable addition to the spring vegetables.

The proper sorts to sow now are principally the early Dutch white and the early stone, especially for the first and second crops.

PLANTING ARTICHOKES.

Where a plantation of artichokes is intended, let them be planted as soon in the month as you can procure good plants; otherwise defer it till April, observing that those suckers slipped off in spring-dressing the old plants, are the proper sets for this purpose.

There are two sorts in general cultivation, the large globe artichoke and the French or green oval; the former is greatly to be preferred for the general supply, the heads being larger, and the eatable parts more thick and fleshy.

They should be planted in an open situation, and in good ground; also let a quantity of rotten dung be spread over the piece, and dig it in. Having provided some well-rooted suckers, trim any straggling parts of the top and root; then plant them with a dibble, in rows a yard and a half distant, and two feet, or a yard, distant in the row. Give them directly some water. This plantation, if kept clear from weeds, and now and then watered in dry weather, will yield good artichokes the following autumn, but will produce more abundantly next year in June, July, and August.

A small crop of lettuce, radishes, or spinach, may be sown the first year, between the rows of the artichokes.

A plantation of artichokes will produce good heads five or six years, and often longer; but it must be observed, that if required to have a succession of this vegetable for four or five months in the summer, a small plantation should be made every spring; for the old stocks, which have been planted a year or two, produce heads in June, July, and August; and those planted now produce heads the same year, in August, September, and October.

SPRING-DRESSING ARTICHOKES.

Make a general dressing of artichokes from the beginning to the middle of this month.

Where the earth has been trenched up, and laid over these plants, to defend them from frost, let it now be levelled down, particularly if the plants have begun to shoot tolerably strong, otherwise defer it till next month; observing as you proceed in levelling down, to dig and loosen all the ground about the plants; at the same time examine the number of shoots or suckers springing from each stool or root, choosing two or three of the strongest on every stool to remain, and all above that number to be taken off close with the hand.

In performing this work, open the earth deep enough about each stock or root, that you may more readily slip off the superabundant shoots clean from the place whence they spring, taking care, as above, to leave at least two or three good shoots, but never more than three, upon each root or stock, closing the earth in again round the root, and also about the young plants, laying the ground close about them with the hand.

The shoots which are slipped off, may be used to make fresh plantations, where required; for artichokes are propagated by planting the young shoots, and by no other method; and this is the most proper season for that purpose.

CELERY.

Celery, for a full crop, may be sown about the latter end of the month, on a bed of light earth, in an open situation. If the seed be sown in rich vegetable mould and kept rather moist, it will thrive the better. Water the bed frequently in dry weather.

The common upright celery, the large hollow upright, the solid stalked upright, and the large red stalked upright, are the sorts most cultivated: the three former are preferred for general crops. The latter variety is rather coarse for salads, but being very hardy stands the winter, and is well adapted for the use of the kitchen, either for soups or stews. After the plants have attained three or four inches in height, they should be transplanted on a bed of solid dung well rotted and beaten into a solid mass with a mallet, or the plants should be pricked out in a very rich border.

CELERIAC.

Celeriac, or turnip-rooted celery, is much hardier than any of the other sorts, and will continue longer in spring. It is often imported from Hamburg for the London market, and is universally cultivated on the continent. The seeds should be sown, and transplanted, as has been directed for celery, only they should be sown thinner, and a greater supply of water given to the plants in all the stages of their growth.

The following is the method of cultivating this vegetable in Denmark, according to the system of Mr. Jens Peter Petersen, and communicated to the Horticultural Society by W. Atkinson, Esq. F. H. S.

"Celeriac requires a light, moist, and rich soil. It is essential that the dung be perfectly decomposed. For summer and autumn crops, sow the seed towards the end of February, very thinly, on a moderate hot-bed, in good rich mould. When the plants appear, they must be inured as much as possible to the open air, and thinned so as to stand one inch apart from each other, and always kept moist. Transplant about the middle of May, or when the plants are four inches high. The roots will be fit for use at the end of July. For a winter crop, sow about the end of March, on a rich warm border; when about an inch high, thin and keep them moist. In June, they will be fit for transplanting: this is to be done on flat beds, four feet wide; four drills are drawn four inches deep, in these the plants, after some of the roots and tops of the leaves are cut off, are put in at the distance of one foot apart, watered and kept so, if the weather be dry. When grown to half their size, which will be about the beginning of August, a small quantity of the mould round the root of each plant must be removed, taking care not to disturb nor expose the main root. Cut off all the side roots and the large coarse leaves close to the plant, levelling the mould to each as you proceed in the work. When the whole is completed, the bed must be sufficiently watered.

Celeriac may be considered as a bulbous variety of celery, and therefore, to be eatable, it requires to be blanched; for which purpose, it must be earthed up to a certain extent, but the less, the better."

PLANTING JERUSALEM ARTICHOKES.

This month is the proper time for planting Jerusalem artichokes, and being of a very hardy nature, they will thrive in any situation, and even in a soil of an ordinary kind: they are not easily eradicated, when once introduced into a garden. The Jerusalem artichoke is propagated in the same manner as the potato, by planting the root, in rows about a yard asunder, and nine or ten inches distant from each other in the row. It is very productive, and consequently, a small quantity will suffice an ordinary-sized family. Nicol observes, " The roots grow in tubers, something in the manner of a yam; the stalks tall and upright. In taste, the roots resemble an artichoke, and hence the name. This vegetable, before the introduction of that most valuable one, the potato, was held in great esteem; being an excellent winter-root of an agreeable taste."

SPRING-DRESSING ASPARAGUS.

About the middle or latter end of this month, spring-dress asparagus-beds, which is done by forking or slightly digging them with a three-prong'd fork. For the purpose of digging or forking these beds, be provided with a proper fork, having three short prongs, six to eight or nine inches long; however, if such instrument be not at hand, it may be performed with a small, short-prong'd common dung-fork.

In forking the beds, be careful to loosen every part to a moderate depth, taking great care not to go too deep to wound the crowns of the roots.

The work of forking is necessary to be done every spring, to improve and loosen the ground, and to give free liberty for the buds to shoot up; also to give free access to the sun, air, and showers of rain.

The beds being forked, they must be raked even; observing, if they be not raked immediately after they are forked, to defer it no longer than the end of this month, or the first week in April, for by that time, the buds will begin to advance towards the surface.

The beds being carefully forked over, a little well-broken mould should be scattered over them from the paths between the beds, or a top dressing of compost, made half of dung well rotted, and the other half of fresh virgin loam, will very much improve the strength of the roots. In raking the beds, make use of an old rake, the teeth of which are worn short, and which will smoothen the surface, without injuring the buds.

PLANTING ASPARAGUS.

New plantations of asparagus may now be made, if the weather be mild, this being the proper season to remove the plants.

In making these plantations, the chief point to be considered is to make choice of a proper soil: choose the best the garden affords; it must not be wet, nor too strong, nor stubborn, but such, as is moderately light and pliable, so that it will readily fall to pieces in digging or raking, and in a situation that enjoys the full sun. If the ground do not naturally possess these qualities, it must be brought as near to that state as possible, by artificial means.

Asparagus is often found to prosper in strong land, but it is apt to go off in winter. In light sandy, or light loamy soils, if well supplied with manure, it succeeds much better, and is not liable to perish in winter. Sea-weed, where it can be procured, is an excellent manure for asparagus. The ground should, if it be intended to have fine crops, and that the beds should last for a number of years, be not less than two or two and a half feet deep, burying plenty of dung at the bottom, as no more can be applied to any depth afterwards. Asparagus, when found in its natural state, is in poor sandy spots by the sea-side, and is of such a diminutive size, that few cultivators, without some botanical knowledge, would imagine it to be the same plant, which they grow to such a size by force of dung and cultivation. The sweetness, size, and tenderness of the shoots, which are the only part used, depend entirely on the rapidity of their growth, and this is to be effected only by the richness of the soil. The commercial gardeners in the vicinity of London consider damp ground so injurious to asparagus, that they elevate their asparagus-beds considerably above the surface-level of the ground, and the same practice is also common in the environs of Paris. In the Memoirs of the Caledonian Horticultural Society, the following is given by Dr. Macculloch, as the method practised in France, and adopted in some parts of Scotland: "A pit, the size of the intended plantation, is dug five feet in depth, and the mould which is taken from it must be sifted, taking care to reject all stones, even as small in size as a filbert-nut. The best parts of the mould must then be laid aside, for making up the beds. The materials of the bed are then to be laid in the following proportions and order: six inches of common dunghill manure, eight inches of turf, six inches of dung as before, six inches of sifted earth, eight inches of turf, six inches of very rotten dung, eight inches of the best earth. The last layer of earth must then be well mixed with the last of dung. The compartment must now be divided into beds five feet wide, by paths constructed of turf, two feet in breadth and one foot in thickness.

Beds made in this manner," he says, "are found to answer well, and last for many years."

In Germany, asparagus-beds are made to last a considerable time, by being well trenched and manured at bottom with bone, horn, chips of wood, or branches of trees, a foot thick. Bones and horn will be a long time in decaying, and will, consequently, give out a gradual and lasting food for the roots of the plants. The ground intended for new beds should have a large supply of rotten or other good dung laid several inches thick; it should then be regularly trenched two or three feet, and the dung buried equally in each trench as the process goes on.

The ground being made level, divide it into beds four feet and a half wide, with alleys two feet wide between bed and bed.

Four rows of asparagus should be planted in each bed, and ten or twelve inches distance to be allowed between plant and plant in the row; letting the outside rows of each bed be nine inches from the edge; or they may be planted only in single rows, two feet and a half apart, or in narrow beds containing two rows of roots only. By this means, a greater facility will be acquired in gathering the crop, without being obliged to tread on the beds.

Let it be observed, that the plants for this plantation consist entirely of roots, not more than two years old; some gardeners prefer those that are only one year, as they generally take root much freer, and succeed every way better than two-year old plants. It is of very great importance for ensuring success in the planting of asparagus, to lift the roots carefully, and to expose them to the air as short a time as possible. While planting, therefore, it would be proper to keep the roots in a hamper or basket among a little light earth, and covered with a mat. No plant feels an injury in the root more keenly than asparagus; the roots are very brittle, and when once broken, do not readily shoot again.

Method of planting them.

Strain the line parallel with the beds, nine inches from the edge: then with a spade cut out a small trench or drill close to the line, about six inches deep, making that side next the line nearly upright; and when one trench is opened, plant that before you open another, placing the plants upright ten or twelve inches distant in the row; or the ground may be drilled for the roots to the depth of four or five inches with the garden hoe. This is the most expeditious method, and answers equally well.

These plants must not be placed flat in the bottom of the trench, but nearly upright against the back of it, so that the crown of the plants may stand upright, and two or three inches below the surface of the ground: let them be all placed an equal depth, spreading their roots somewhat regularly against the back of the trench, at the same time drawing a little earth up against them with the hand as you place them, in order to fix the plants in their due position, till the row be planted: when one row is planted, immediately with a rake draw the earth into the drill over the plants, and open another drill or trench as before directed; and so on till the whole be planted. When they are all planted, let the surface of the beds be raked smooth, and clear them from stones.

At the corner of every bed, let a firm stake be driven into the ground, to serve as a mark for the alleys, and one also at the end of each row.

In planting asparagus, it is customary with those gardeners, who are obliged to make the most of every spot of ground, to sow a thin crop of onions the first year on the new asparagus-beds: this should be performed before the beds are raked, sowing the seeds, and raking them in; by this means a crop of onions may also be obtained without hurting the asparagus, provided the onions be not suffered to grow just about the plants; but, if circumstances will admit, it will be much better not to exhaust the beds with any crops at all.

The asparagus being planted, the next care is, when the plants come up, which will be about the latter end of the succeeding month, or the beginning of May, to keep them clean from weeds; which must be well attended to during the summer. It will be three years from the time of planting before the asparagus plants produce buds large enough to cut for use, in any general gathering; though sometimes in good ground, and a remarkably prosperous growth in the plants, which are the production of young shoots, a few of the largest may be cut the second year after planting: it will be doing greater justice to the plants, if none be cut before the second, and only a few the third year. A plantation of asparagus, if the beds be properly attended to, will continue to produce good buds ten, fifteen, and often twenty years; instances have occurred of beds being cut for thirty and forty years.

In making new plantations, instead of forming the beds with plants, the seeds may be sown at once in the beds; by this practice, the plants are not disturbed by being removed, and consequently produce more regular crops. The beds may be made the same as if they were to be formed with young plants, and the seeds dropped in, in lines, covering the seeds about an inch deep.

When the plants are about six inches high, they must be thinned, leaving the strongest about nine or ten inches apart. During the first season, keep them clear of weeds, as they will be very tender, and easily hurt by the weeds. In about three years after sowing, a few buds may be cut. The fourth year, the buds will be both strong and abundant.

SOWING PARSLEY.

Parsley, if not sown last month, may now be sown. Sow in drills in the quarters, or for edgings, observing to sow it where hares cannot get at it, as they are remarkably partial to this vegetable.

If a large supply be wanted for market, it may be grown in continued rows nine inches asunder, or on the general surface, to be trodden down and raked in.

SOWING PARSNEP.

If parsneps were not sown in February, sow now for a principal crop. This is a nutritious and useful vegetable, and in some countries is next in estimation to potatoes. (See *Carrots.*)

SOWING SPINACH.

Sow spinach to succeed that sown last month: the sowings should be repeated once a fortnight or three weeks, to have a regular supply, for the plants of one sowing in spring and summer will not continue fit for use longer than that time, before they will run. Prefer the round-leaved or smooth-seeded kind; that being the most proper sort to sow at this season, its leaves being considerably thicker and larger than the prickly-seeded.

This seed may be sown either alone, or with some other crops, such as between rows of beans, or on the ground between cabbages or cauliflowers; it should be sown moderately thin, and generally in broad-cast, in which method a little radish-seed may be sown with it: when the seed is sown, if light dry ground, tread it over lightly to settle the surface and seed, then rake it regularly; or it may be occasionally sown in broad flat drills, about an inch deep, and a foot broad.

Let it be observed, that spinach should not, at this season, be sown where the ground is much shaded with trees or bushes; for in such situations, the plants would be drawn up to seed before they arrive at half their growth.

Hoe or hand-weed the early crops, thinning the plants at the same time, but particularly those sown broad-cast, to five or six inches distance; the thinner they are, the larger they will grow.

The crop of winter spinach, which was sown last autumn, will now be advancing for use, and should be kept clear from weeds, and the earth between the plants stirred with a hoe. In gathering, if they stand close, they should be thinned out clean by the roots; but if they already stand at great distances, only crop the large outer leaves as wanted, till they begin to run, then cut them up clean to the bottom.

SOWING HAMBURG PARSLEY.

At this time, sow Hamburg parsley for a full crop. As this is not much used in the majority of families, a small quantity will be sufficient.

SOWING BEETS.

For successional crops, sow a little both at the beginning and also at the end of the month, if favorable weather. *For the general crop, see April.*

PLANTING CHIVES.

If chives were not planted last month, let that be now done.

MUSHROOM-BEDS.

Continue to protect mushroom-beds from frost and rain, either of which would destroy the spawn. And if convenient, new beds may also be made, which will produce in succession, during the summer and autumn.

PLANTING HORSE-RADISH.

Where horse-radish has not been already planted, let that be done as soon as possible, as the buds will be beginning to spring and might be injured by the operation.

SOWING LEEKS.

This is a good time to sow leeks for a full crop in strong lands, but if they have been forwarded on a slight hot-bed, the greater will be their size. On light warm sandy soils, they will be yet in good time in the open ground. Sow in beds to be afterwards transplanted, or thinly in such beds, where they are to remain to come to their full size.

SOWING KIDNEY-BEANS.

About the middle of the month, if the ground be dry, and the weather settled, sow a crop of kidney-beans: they should be planted in a warm sheltered situation, and may be sown longitudinally along the border, and when necessary, after they come up, use the pea-glass case recommended for early crops of peas.

Kidney-beans, like many other fast-growing vegetables, are much improved by transplanting. For this purpose, sow in the beginning of the month a few in pots or boxes; bring them forward in any of the forcing departments; the peach-house is to be preferred, or in a slight hot-bed. Harden them by degrees; by the end of March, they will be fit for planting out in a warm border, or at the bottom of a wall, and will be in fruit sooner, and yield a more prolific crop, than those planted in the open border in the beginning of the month. Make choice of a dry day for planting the crop in the open air, and plant on the surface, in strong soils, as recommended for peas; cover three inches, and leave the covering in the form of a ridge, so as to throw the rain off, as they are very tender, and apt to rot in the ground. For a full crop, see *April.*

PLANTING POTATO-ONIONS.

See *December* and *January.*

SOWING ONIONS.

Onions require a rich mellow soil, on a dry subsoil, and are an exception to the general rule of never cropping the same ground successively with the same plant. Some gardeners sow onions on the same piece of ground for many years, and the market-gardeners at Hexham sow their onions on the same ground for twenty or thirty years successively, but annually manure the soil. After the ground is dug, the manure is spread on the surface, in a very rotten state, and the onion-seed is sown upon the manure, and covered over with mould from the alleys: by this method, they produce fine crops in almost all seasons. Indeed, so general is this practice, that it would require much reasoning to persuade them to the contrary. Onions must naturally act (to a certain extent) as an exhauster of the ground on which they grow, at least of those parts of the ground from which they derive their principal nourishment; yet we find the same piece of ground for twenty years producing excellent crops. If the ground be prepared as advised in February, which is to manure it in autumn, and to rough dig it, which is to be done by digging in the compost manure, and laying the ground up as rough as possible, so as to present as large a portion of surface to the action of the frost and rain, as can be done, it becomes to a certain degree renewed, as the fibrous parts of onions, which are, correctly speaking, their roots, penetrate only a few inches deep, and if they partly exhaust the surface of one year, the operation of digging deep brings up an entirely new surface for the crops of the next. Take advantage of a fine day, when the ground is dry, to point over or slightly dig the surface, and in doing so, break the clods well with the spade, or rake the surface with a large rake, as the operation of digging proceeds. Drill the ground an inch deep, and sow the seeds reasonably thin; but in this particular, be guided by the quality of the seed, which can be ascertained by sowing one hundred, or fifty, or twenty seeds in a pot or pan, which may be placed in any of the forcing departments to vegetate quickly. Count the number of plants which come up; by this means, the quality of the seed can be correctly ascertained, and then sow thickly or thinly, according to the result of the experiment. The drill system is to be preferred.

One of the most intelligent writers, as a practical gardener, in the Memoirs of the Caledonian Horticultural Society, adopts the following method of preparing the ground for his onion crops in light soils, and which has been attended with great success, both as to the production of good crops and as a preventive for the maggot, which in old garden ground, if light, is found to be very injurious to these crops: "In the end of October," he says, "I dug over the ground, leaving as much surface exposed as possible, by what is called winter digging. It lay in that state till the end of December, by which time it generally happened to be exposed to a severe frost. On a frosty day, about the beginning of January, I wheeled on a top dressing of cow's dung, and spread it all over the surface. I let this lie to have its juices washed into the soil before the time of sowing, at which time I raked off all the dung that would come with the rake, which operation smoothed the surface of the ground. Then, *without digging*, I lined off the alleys, sowed the seeds, trod them in, covered them with earth from the alleys, and raked the beds. From this mode of treatment I always had excellent crops of onions. This method gives a sort of consistence to old soft soils, such as are often to be met with in old gardens on gravelly or sandy bottoms; and the onions generally form their bulbs upon the surface, which I take to be their natural position, and where they are less liable to the attacks of maggots than when they form their bulbs under the surface, which is principally occasioned by dunging and digging light soils for onions in the spring."

Any of the sorts in general cultivation may be chosen, according to the fancy of the sower, or the purpose for which they may be intended. The Strasburg, Deptford, and globe, are preferred for principal crops; the Portugal and Spanish are esteemed for crops which come the soonest into use; James' Keeping, and pale red, for keeping; the blood red is much sown in Scotland and Wales for its strong flavor, and is esteemed in the London market for its diuretic qualities; the Lisbon is a good sort for autumn sowing, but the Strasburg is generally sown at that time. For the distance between the rows, see *February*.

PLANTING ONIONS FOR SEED.

Where it is intended to save the seeds of onions, either for sale or private consumption, plant them at this time. Select some of the finest bulbs in the autumn, and reserve them for this purpose. Plant them in drills three or four inches deep, and one foot apart; place the onions ten or twelve inches asunder in the line, according to their size and sort. For the convenience of clearing them from weeds in summer, and supporting them when their heads become heavy, plant them in beds of three or four rows each, allowing two feet and a half between each bed, for the purpose of getting in among them. They have now only to be kept clear of weeds, and supported as they advance in growth, and will ripen their seeds in August or September.

SOWING CARROTS.

Crops of carrots may now be sown in light dry soils; sow in drills ten or twelve inches apart, and cover carefully about half an inch deep. The orange and Alteringham are the preferable sorts.

A spot of light ground, in an open situation, should be chosen for this crop, for the roots thrive considerably if those points be properly attended to.

The ground should be trenched one good spade deep at least, or rather it should be double dug. Observe in digging to take but thin spits, and be careful to break all clods, that the roots may have full liberty to run down long and straight, for if the earth be not well divided nor separated, the roots are apt to grow both short and forked.

The seeds may either be sown broad-cast all over the surface, or the ground may be previously divided into beds four or five feet wide; in either method, however, sow the seeds thinly with an even hand, and rake them in; but previously to raking, observe that, if the ground be quite light and dry, the seed may first be trodden in evenly, in doing which, take care to tread it lightly and regularly, pretty closely together, then let the seed be raked in moderately. By this method, the seed will be buried equally in every part, and the plants will also come up regularly.

In sowing these seeds, however, it will be proper to observe, that when the ground has a disposition to be wet, or is apt to bind, it will be proper, in that case, to divide it into beds four or five feet wide, with narrow alleys about a spade wide, then sow the seed. The ground, however, must not be trodden, but take your station in the alleys, and rake the seed in regularly, taking particular care not to draw the earth in heaps.

In sowing carrots, as well as most other crops, the drill system is to be preferred, as presenting a much neater appearance, and affording an opportunity of stirring the surface of the ground between the rows to a greater depth than can be done if sown broad-cast. The advantage of deep hoeing all crops cannot be too forcibly impressed on the mind of the cultivator, as it has the effects of resisting the droughts of summer, as well as greatly encouraging the growth of the plants.

SOWING RADISHES.

Sow more radish-seed, to raise a supply of radishes to succeed those sown in February.

There should be some seed, both of the salmon and short-top, sown at three several times this month; that is, about the beginning, middle, and latter end; by which means there will be a regular succession of young radishes for the table. Let this seed be sown now in an open compartment, where the ground is rich and somewhat moist.

In sowing these seeds, attend to the method laid down in the two former months.

Thin the crops of early radishes, where the plants stand too close, pulling up the worst, and leaving the best plants standing at about two or three inches asunder, and clear them from weeds.

In dry seasons, let the early crops of radishes be frequently watered, otherwise they will not grow freely, nor will they be mild and crisp for eating.

SOWING INDIAN CRESS, OR NASTURTIUMS.

Indian cress will grow freely in almost every soil or situation, and the flowers of it are used both in salads and in garnishes. It requires to be staked in the manner of peas, if sown in an open spot. On account of its rapid growth, it is particularly well adapted as a hedge, or to act as a screen to any unpleasant object, independently of which it is, in itself, extremely beautiful. It may be sown in drills two inches deep any time during this and the two succeeding months. It will keep in flower till destroyed by frost.

SOWING CHERVIL AND CORIANDER.

Sow these seeds in shallow drills, eight or ten inches apart, and cover them about half an inch with mould. Choose a sheltered spot.

These herbs are all to remain where they are sown, and the chief culture they require is to be kept clear from weeds, but as the plants soon run up to seed, a small portion should be sown every month.

SOWING BASIL.

For the greater certainty of success, it will be advisable to sow basil in pots or pans, in any of the forcing departments, or on a slight hot-bed. Sow in rather dry mould, and be sparing of water, as it is apt to rot. The plants will be fit for transplanting in May.

SOWING PURSLANE.

The end of this month is the proper time to sow this salad, for if it be sown earlier, it runs the risk of being injured by the frost, owing to its great succulency. It may be sown on a light early border, in the same manner as lettuce, but much thinner. It may also be sown like cresses in drills, on any open spot, once in three weeks or a month during the summer.

PLANTING MINT.

This is now a good season to make new plantations of mint.

This plant is propagated either by parting the roots, by slips of the young spring plants, taken up with root fibres at the bottom; also by cuttings of the young stalks in April and May; but at this season, increasing it by slips, or parting the roots, is most generally practiced, the method of which is as follows.

Towards the end of this month, have recourse to such old beds of mint as are well stocked with young plants, and thence draw up a sufficient number of the best shoots properly rooted, observing to draw them up carefully, and with the assistance of a knife at times, raise or separate them; by which care, every plant will rise with good roots.

Having provided the plants, let them be planted in rows, about six inches apart, and five or six inches asunder in the rows; let them have immediately a tolerable watering, to settle the earth close about their roots.

The method of increasing mint by roots is, to get a number of old roots, and let them be parted in a proper manner; then draw drills with a hoe six inches apart; plant the roots in the drills, cover them about an inch thick with earth, and then rake the ground.

But when the above method is to be followed, the roots should be procured and planted either in February, or the beginning of this month, or in October or November.

or in rotten tan. They will do equally well, either covered or uncovered. In the latter way, they are less likely to be sandy or gritty. Place them in a dry place, as they are apt to damp.

SOWING NASTURTIUMS.

Same as Indian cress, see p. 118.

NORMANDY CRESS.

A crop of this beautiful and useful salad may be sown in a border of light earth. The seed must be sown thinly, as it grows luxuriantly.

SOWING LETTUCE.

Make sowings of the various sorts of lettuce. Sow each sort in a bed separately. The varieties are very numerous, but the majority of them will succeed equally well at this time, if sown on a sheltered border.

There is a sort not generally known, which we accidentally discovered some years ago in Scotland, among a crop of leeks. The seeds of the leeks were from Messrs. Peacock, nurserymen, Leith Walk, Edinburgh, who on inquiry stated, that the same circumstance was observed by another person, who also had purchased some of the leek-seed from the same bag. This sort Messrs. Peacock called, the New Cape cos. It grows to an extraordinary size, but notwithstanding its magnitude, it is the tenderest and finest lettuce we have ever seen. It requires to be sown in March, and afterwards planted out three feet distant, plant from plant, in a rich soil. We have since had seeds of the same sort from those very respectable seedsmen, and found them to be the finest lettuce, for a principal crop, with which we are acquainted. For variety, a number of sorts may be sown. Sow each sort separately, and if to remain in the seed-bed, sow thinly, or transplant a part, and leave a crop on the bed, in which they are reared. Transplanted lettuce run to seed sooner during summer than those, which have not been transplanted.

PLANTING LETTUCE.

Any time this month finally thin out the crops of lettuce, which have stood the winter, into open borders, at from nine to twelve inches apart, leaving a crop on the ground undisturbed. Those who wish to save lettuce-seed, may plant such sorts as may be wished at this time, giving them from twelve to fifteen inches from plant to plant, or more, according to their size. The crops of lettuce sown upon slight hot-beds will be ready by the end of the month to plant out in sheltered places; under favorable circumstances, they will succeed the winter-sown crops.

DANDELION.

This is an excellent salad, and a good stomachic: it is not generally cultivated in gardens. Where it abounds in any waste place, cover it at this season with rotten tan, decayed leaves, &c. It will soon come up, and be well blanched, in which state, it is a great addition to our spring salads. This salad will force well all the winter on a slight hot-bed, or in any very warm cellar.

CORN-SALAD, OR LAMB'S LETTUCE.

This is also an addition to our spring salads, not very generally cultivated; where it is desirable, sow some of the seed this month on a border of light earth. Continue to sow once a month till August.

AMERICAN CRESS.

This is often called black American cress and French cress. It is an excellent winter and spring salad, and being a native of most parts of this country, stands all seasons with little protection. If wanted all summer, sow every six weeks from this time till August; for which, see that month.

WINTER CRESS.

The use and culture, the same as the American cress.

WATER CRESS.

This well-known and useful salad, is said to have been first cultivated in 1808. If plantations be wanted of it, they may now be made, or indeed in any spring or autumnal month. For full directions, see *May* and *June*.

WORK TO BE DONE IN THE KITCHEN GARDEN.

If the weather be now favorable, that is, dry and mild, the various branches of cropping should be attended to with diligence. No time should be lost in committing to the soil the requisite seeds and roots of plants.

In early light dry soils, it will be an advantage to sow and plant early, whereby the crops will gain sufficient strength to resist the droughts of summer; but in such as are cold, wet, and late, the state of the weather must determine the time of sowing. It is always better to wait until the ground be in a fit state to receive the seed, than to sow too early, when it is not in such good order, as many of the less hardy seeds will not vegetate freely, indeed scarcely at all, if sown at this early period of the year, when the ground is wet. Let all coverings be removed which were used in protecting vegetables during the winter, and rough dig all ground not immediately required.

The gravel-walks should now be put in order for the season, and all unpleasant objects removed from this time till the end of autumn; for an equal degree of order and neatness is as necessary in the culinary garden, as in that appropriated to flowers alone.

APRIL.

PLANTING BEANS.

Plant more beans as a successional crop to those planted the preceding month, and earth up those already above ground, accordingly as they may require it. Hoe the ground frequently between the rows, both to destroy the weeds and promote the growth of the beans. If any have been sown for transplanting, let that now be done; for which, see *March*.

SOWING PEAS.

Sow more peas for a successional crop, and earth up such as are in want of it. Stick such as are about four or six inches high. If any have been sown for transplanting, let it now be done.

MANAGEMENT OF CAULIFLOWERS.

The early cauliflower-plants under hand-glasses, should have earth drawn up round their stalks. This will be of great service in promoting their growth; but let due care be taken that no earth be drawn into their hearts, for that will prove very injurious to the plants.

The hand or bell-glasses may still be kept over these plants at night, and during cold wet weather; but in fine days, and when there are warm showers, let them be exposed to the free air; but when the plants are advanced in growth, the glasses should be tilted proportionably high on props, first raising a border of earth two or three inches high about the plants, then place the props upon that, and set the glasses on the props; but about the end of the month, if the plants be large, they should be taken quite away.

Where any of the winter standing cauliflower-plants in frames, borders, &c. were not finished planting out last month, let it now be done, as there directed.

Young cauliflower-plants raised from seed sown last month, should now be pricked out into nursery-beds, or some in a hot-bed, to forward them for final transplantation.

The cauliflower-plants which were produced from seed sown early this season, should be removed about the latter end of this month, if sufficiently strong, if not, defer it till next month.

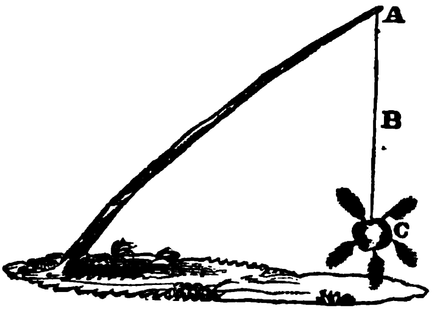
Choose a piece of good ground for them, in an open situation; some good rotten dung should be dug in. Set the plants about two feet, or thirty inches apart from each other every way.

Water them as soon as they are planted; and in dry weather repeat it occasionally, till the plants have taken good root.

SOWING CAULIFLOWERS.

Cauliflower for a successional crop may be sown any time in this month on a sheltered border.

Birds being very destructive to the seeds of all the brassica tribe, it will therefore be necessary to guard against them by covering the beds with mats, or with old fishing-nets, if they can be procured, until the seeds begin to vegetate. The annexed figure represents a very good and simple scare-crow for birds. Take a long straight slender rod of hazel, or any other elastic wood, about six or eight feet long, place it in the ground in a slanting direction; from the point A drop the line B of small cord, to which at C fix a potato, which is stuck full of feathers of different colours. This will produce a simple pendulum, which is kept in motion by the wind; the potato may be suspended at about twelve or fifteen inches from the ground. This is an efficacious method of scaring away birds, and it was observed by a friend in the gardens of the late A. Bacon, Esq. of Elcot, in Berkshire.



The cauliflower-plants kept in pots during the winter may, when the weather is fine, be planted out. The ground being dug, make holes sufficiently large for each plant to admit of a spade full or two of good rotten dung being placed in it, and upon this dung set the plants, one in each hole, at the regular distances. Turn them carefully out of the pots without disturbing the balls; if the weather be dry, settle the mould about them with a gentle watering. The pots may be left by their side, and if sharp frosts occur, cover the plants every evening by inverting the pots over them, or shelter them by placing one or two branches of spruce, or fronds of strong fern, round them. Remove these protections by degrees, as the plants get established, and the weather becomes more settled.

CAPE BROCCOLI.

The cape broccoli sown in autumn, and wintered with the cauliflowers, may now be planted, and treated in the same manner as the cauliflower. To protect them from the cold cutting winds of April, stick a few branches round each plant; this will not only break off the winds, but partially shade them until they have taken root.

SOWING BROCCOLI.

Sow a moderate quantity of early purple broccoli, early white, dwarf brown, three-headed purple broccoli, Portsmouth, sulphur-colored, cauliflower broccoli, late dwarf purple broccoli, Siberian, or Danish. Sow the seeds on a rich sheltered border, and cover them with mats, or long litter, if the weather be frosty. Should it, however, be mild and dry, give plenty of water. When the plants are two or three inches high, transplant them into rich beds four inches apart. Still continue the use of water freely, if the weather be dry; in two or three weeks, they will be fit for a second transplanting; but should any of the sorts, or all come up weakly, leave them for a longer time in the seed-bed; from which, a part may be planted out where they are to remain, in May, without being transplanted at all a second time.

SOW AND PLANT CABBAGES.

Sow and plant all sorts of cabbages, and earth up and clear from weeds the crops already planted. Take advantage of dry days to stir the surface about the stems of all the forward crops of cabbages: this will refresh and strengthen them. Prefer for this sowing the Battersea, Imperial, Antwerp, and Pentonville.

SOW SAVOYS.

Sow full crops of savoys, both at the beginning and end of the month.

BRUSSELS SPROUTS.

Sow now Brussels sprouts for a full crop. It is difficult to procure the genuine seed of the Dutch Brussels sprout, which is preferable to all other varieties, forming little close heads in spring. In Holland, and other parts of the continent, this vegetable is held in high estimation, and is sent to table during nearly ten months of the year.

SOWING BORECOLE.

Many sorts of kale are understood under the general name of borecole; the principal of which are, the green borecole, or Scotch kale, German greens, Buda kale, Woburn perennial kale, ragged Jack, purple or brown kale. For the others, see the *Systematic Catalogue.* The seeds of the two former and the two latter may now be sown on a border of middling good ground. The third, or Woburn kale, is propagated by cuttings of six or seven inches long, and planted, where they are finally to remain. By the end of this month, the crop of this kale will be exhausted, the stems may be cut down within two or three buds of the ground; which must be dug over, and afterwards kept clear of weeds.

SOWING SALSAFY, SCORZONERA, AND SKIRRETS.

Sow all these sorts about the middle of the month, in drills twelve or fifteen inches apart. Cover them slightly. As their roots are esteemed, when large, let the ground be sub-trenched, and manured with a compost of rotten dung, road-scrapings, &c. Avoid using rank dung for any sort of vegetable, the roots of which are to be used.

If the ground be dry, tread it slightly, and scatter a few lettuce-seeds thinly among them.

They will require thinning in May or June, to five or six inches distant; the roots will attain perfection in autumn, and continue good during the winter, until the following spring.

PLANTING POTATOES.

New or improved varieties of this valuable root are only to be obtained from seed, which ripens in great abundance upon the later kinds; but the earliest varieties seldom produce either flowers or seeds. Where it is intended to originate varieties from seeds, the apples as they are called, or seed-envelops, should be gathered in October when ripe, and the seeds taken out by washing the pulpy matter several times, until the seeds be left clean. They should be preserved until the spring, and sown in a light dry soil in drills, and covered to the depth of three inches; they will soon appear above ground, and, as they advance in growth, thin them out to five or six inches apart, and keep them clear of weeds till autumn, when they will be fit to take up. The first season, the tubers will be very small, though numerous; select such, whose formation appears to be most perfect for the purpose of planting the ensuing spring. At the end of the second year's growth, they will have attained a size sufficient to determine their properties; and such as appear worthy of cultivation, should be kept for planting, and the remainder thrown away. It would undoubtedly be worthy the attention of cultivators, who attempt this process, to impregnate the blossoms of one valuable sort with the farina of another; many valuable fruits have been thus produced, and as the parts of fructification in potatoes are sufficiently large, the greater would be the probability of success.

Early potatoes from a defect in their formation, are not so capable of being thus multiplied into varieties. An experiment of Mr. Knight's, given in the Horticultural Society's Transactions, is for its ingenuity worth recording, by which he induced a state of flowering in potatoes of this sort. "I suspected the cause of the constant failure of the early potato to produce seeds, to be the preternatural early formation of the tuberous root, which draws off for its support that portion of the sap, which, in other plants of the same species, affords nutriment to the blossoms and seeds, and the experiment soon satisfied me that my conjectures were perfectly well founded. I took several methods of placing the plants to grow, in such a situation as enabled me readily to prevent the formation of tuberous roots, but the following appearing the best, it is unnecessary to trouble the society with any other. Having fixed strong stakes in the ground, I raised the mould in a heap round the bases of them, and in contact with the stakes: on the south sides I planted the potatoes from which I wished to obtain seeds. When the young plants were about four inches high, they were secured to the stakes with shreds and nails, and the mould was then washed away by a strong current of water from the bases of their stems, so that the fibrous roots only of the plants entered into the soil. The fibrous roots of this plant are perfectly distinct organs from the runners which give existence, and subsequently convey nutriment to the tuberous roots, and as the runners spring from the stems only of the plants, which are in the mode of culture I have described, placed wholly out of the soil, the formation of tuberous roots is easily prevented; and whenever this is done, numerous blossoms will soon appear, and almost every blossom will afford fruit and seeds."

From these facts, Mr. Knight considered it sufficiently proved, that the same sap gives existence alike to the tuber and the blossom and seeds, and that whenever a plant of the potato affords either seeds or blossoms, a diminution of the crop, or an increased expenditure of the riches of the soil, must necessarily take place. The practice of taking off the blossoms of those sorts which produce them, is in accordance with this idea, and when practised, will certainly tend to increase the bulk of tubers, by diverting those juices into them, which otherwise would be expended in perfecting flowers and seeds.

In planting potatoes, much importance is attributed by some horticulturists to the size of the sets, or portions of the tuber, which are to be planted, some recommending them to be large, and others small, and many attach a degree of importance to that part of the tuber from which the best sets should be taken. According to the doctrine of Knight, small sets may be used for late crops, as the plants attain a considerable size before they begin to form tubers; whereas, for early crops, the largest tubers should be chosen; these, he affirms, not only produce stronger plants, but they will also more readily recover the injuries sustained by frosts, on the principle, that as they are fed by a copious supply of food from the larger tubers, they are the more capable of sending up vigorous shoots, to replace those, which may have been injured or destroyed by frost, or other causes. In cutting the tubers into sections or sets, the extreme or watery end should be rejected, as having a tendency to run too much to halm, and having the eyes clustered and small. The root, or dry end, should also be rejected, as being more tardy in growth, and being supposed to produce the curl from being over ripened. The middle part, therefore, of the tuber is to be preferred and divided in pieces, having each one perfect and well-formed eye or bud.

An intelligent contributor to the Gardeners' Magazine, who styles himself a Denbighshire Gardener, gives the following valuable remarks upon choosing seed-potatoes: "Preferring unripe potatoes for seed is not new in practice, it has prevailed for ages. Where do the farmers of the rich soils and warm countries send for their seed-wheat and seed-potatoes? to the cold hilly countries, where they do not one season out of three thoroughly and perfectly ripen their seed. In Denbighshire, we call the hilly, or unripe potato, the *wet* potatoes; and those from the rich soils and warm situations, where they ripen perfectly, we call the *dry* potatoes, although exactly the same varieties: the wet or unripe are reckoned the best for seed, and the dry for food. The potato tuber is a perfect organized system, in which the circulation regularly proceeds, and if suffered to ripen, will then tend to decay; but if separated before ripe from the stem or stalk, which furnishes it with blood or fruit-sap descending from the leaves, the circulation of the blood-sap is suddenly arrested."

"The ripe potato having performed all its operations, becomes more inert, but the circulation of the sap in the unripe tuber having been stopped, it starts more readily, and with greater vigour when planted; the one seems to die, worn out with age, the other seems accidentally to have fallen asleep, and when awakened, possesses an unspent vigour and energy. This is the case not only with the potato, but also with the apple, pear, and other fruits, whose life, if I may so express it, it is desirable to prolong or extend beyond the time naturally allotted to it; they are then taken off the tree long before they are ripe, and experience has taught us, that they will keep much longer, and eat much fresher, than those suffered to grow ripe upon the tree: the same is the case with the potatoes taken up before ripe. Placing the potatoes upon the gravel, or in the sun, on any dry but not a grass walk, has the effect of stopping the circulation in the tuber, in which nature has provided resources to carry it on to an extraordinary degree, unless so stopped."

"If you will examine the potato-stem or plant, when the tubers are beginning to be formed, you will find that the potatoes are placed upon the runners pushed or issuing out from the plant or stem *above* the set. The functions of the set are to push out roots, to gather food from the soil, to supply the plant and leaves with that food, and from the leaves, the blood or fruit-sap flows down to form the runners, and new potatoes; and the more you earth up the plant or stem, the more runners are formed higher up on the stem, and the more potatoes are produced." He concludes by stating, "that earthing up the potatoes causes them to be later; and that by earthing them up after taking away a few of the earliest, also causes them to throw out more runners and produce more potatoes; the top or eye-cuts producing potatoes a fortnight earlier than the bottoms of the same tubers."

This is somewhat similar to the doctrine laid down by Mr.

Knight, which will be subsequently noticed. The same intelligent writer, in another communication in that useful periodical, supposes, that seed-potatoes from a cold and poor soil, when planted in a rich and favorable one, will hasten their maturity six weeks; he justly observes, that "obtaining a crop six weeks earlier than usual is an object deserving the highest consideration; its coming into use at the season of the year, when the poor man's garden affords him no new vegetables, when the stock of the old potatoes is become short and dear, and withal so bitter, unpalatable, and unwholesome, to have then a crop of new potatoes is a delicacy indeed, especially to the poor, depending so much for their support upon the potato; still more so to the Irish poor, to whom the potato may be said to be the staff of life."

Regarding that disease called the curl, so injurious to potato crops, he presents us with the following valuable remarks: "I have," he says, "planted several rows of early pink-eyes from ripe tubers, which are now coming up almost all curled; not a curl appears on any of the same variety from unripe tubers, although planted within a few yards of each other. The last autumn, (1826,) being warm and long, enabled the worm to grow stronger and more vigorous to attack the potato, in which it made holes, and therein perhaps deposited its eggs, which, nourished by the heat, acquired life and strength, and after the potato was planted and became soft, it grew vigorous and preyed upon its sap, rendering the plant weak and curled. I am," he says, "inclined to think that the worm is the cause of the curl, and that if potatoes, intended for sets, were taken up before being ripe, that is, before they are full grown, the worm will not have attacked them; and that if it has, exposing the potatoes to the sun will kill the worm before it has deposited any of its eggs." He concludes this paper by recommending potatoes intended for seed for the following season, to be taken up before they are fully grown, and exposed to the sun for a month or six weeks, and at the season of planting, to "observe the eye-cut, and by placing it upward, it will secure, without any further trouble or expense, a crop of every variety of potato six weeks earlier than the same variety will produce if allowed to grow to maturity."

Mr. Knight, in one of his valuable papers, in the Transactions of the Horticultural Society, says, "When the planter is anxious to obtain a crop within the least possible time, he will find the position in which the tubers are placed to vegetate by no means a point of indifference; for these being shoots or branches, which have grown thick instead of elongated, retain the disposition of branches, to propel their sap to their leading buds or points most distant from the stems of the plants of which they once formed a part. If the tubers be placed with their leading buds, a few very strong and early shoots will spring from them; but if their position be reversed, many weaker and later shoots will be produced, and not only the earliness but the quality of the produce will be much affected in size."

Ground in which potatoes are to be planted, if not in tolerable good condition, should be dunged, but when they can be grown in fresh unimpoverished soil without manure, their flavor will be better. Ground which has long lain uncropped, or that which has never been in a state of cultivation, if dry and not very barren, will produce excellent potatoes, both in quantity and quality. Leaves of trees, not too much decomposed, are good manure for this crop, and will produce both early crops, and have the least effect on their flavor. Rank and unfermented dung is the worst that can be applied.

Amongst the many curious and interesting experiments made by Mr. Knight upon this valuable vegetable, is the following: "by planting in June or July, he conceives, that an exhausted good variety may, in a great measure, be restored, by using the produce of this late planting for the seed of the succeeding season, planted at the proper time." But, with all due deference to the worthy president's theory, we have been disappointed in practice by its adoption. In 1824 and 1825, we planted several kinds of potatoes, in the beginning of July, in the open fields, which, although considered good sorts, yet had ceased, in the gardens at Stratton Park, to be good in quality. The produce of this late planting was again planted in March and April in the gardens, and we found them not improved in quality nor size, but rather progressively worse. It is, however, a matter of much importance, and the result of similar experiments may differ in different situations. A vegetable, which constitutes no inconsiderable portion of the food of man, deserves our utmost care in its improvement, and it is to be regretted, that so few appear, in that point of view, to pay the necessary attention to it. Indeed, to Mr. Knight, in England, and Messrs. Dickson, Crichton, Young, and Shirreff, in Scotland, we are indebted principally for the improvements, which have been made in the culture of this root.

SPINACH.

Sow spinach for a successional crop, to come in, in May and June. Where a constant supply of this plant is required, sow once a fortnight, as the spring sowings soon run up to seed; the round-leaved spinach is still the proper sort to sow, either broad-cast and raked in, or in shallow drills, or in drills between the crops of peas, beans, and such like crops; the shade afforded by them will prolong the season of the spinach.

Hoe the spinach which was sown in the former month, especially the broad-cast sowings: and thin the plants out to three, four, or five inches distant.

SOWING BEET.

Beet for a full crop should now be sown; the ground should be sub-trenched, which will prevent the roots from forking. Sow in drills twelve inches apart, and moderately thin; cover lightly; and, if the ground be dry, tread the whole slightly. The true blood-red is the sort most esteemed for its roots; the other sorts should also now be sown.

The white beet is cultivated as a substitute for spinach. The great white or sweet beet is cultivated for the midribs and stalks, which are separated from the lamina of the leaf, and are stewed and eaten like asparagus under the name of chard. This sort is much more esteemed and cultivated on the continent than in this country.

The sort called mangel-root (mangel-würzel of the Germans) is a valuable agricultural root for feeding cattle, and affords, equally with all the others, a considerable quantity of sugar. It is seldom cultivated in the gardens. In dry seasons, beets are liable to be destroyed by the turnip-fly; it is therefore advisable to sow a small bed or two in different parts of the garden, partially shaded. If the general crop fail, then it may be made good by transplanting those from the seed-beds. This should, however, be done carefully, as the roots are liable to be destroyed in taking up. The mangel-wurzel we would particularly recommend to the attention of cottagers; it will grow in almost any situation, and if reared on a small seed-bed will be fit to transplant on the same ground that has been occupied by early potatoes, peas, or such like crops. It will be extremely useful to those who keep a cow, giving to the animal three or four roots twice a day, according to their size; some pigs are remarkably fond of it, and when boiled few will refuse to eat it.

The seeds of the true red beet are difficult to procure; when therefore a gardener succeeds in obtaining a few good roots, he should be careful to propagate it by seed. In doing so, let it be planted remote from all other beets, to guard against their being impregnated with any other sort.

SOWING CAPSICUMS.

Capsicums are used either for pickling or preserving, and may be sown in any kind of forcing-house, or in a hot-bed, in a pot or box filled with fine light mould. Having attained to the height of about two inches, it will be proper to plant them in small pots, and afterwards to repot them, and place them in a forcing-house; they may then be planted out in June in a warm sheltered situation. They may also be planted at this time in the border of any kind of forcing-house, where they are not much shaded, and have ample room to grow; the culture of them is simple, according to either of these methods. They require a light earth, but not excessively rich, and to be pretty freely supplied with water; or they may be sown in the open air, where, in favorable situations, they will come to maturity.

SOWING CARROT.

Carrots should now be sown; the sorts are, the orange, long red, and the Alteringham, which is an excellent sort originally from Cheshire; the orange is also a good sort; the long red is generally cultivated in fields for cattle, and in farmers' gardens, for colouring butter. The seeds have numerous forked hairs on their borders, by which they adhere, and therefore, previously to sowing, they should be well rubbed between the hands, and mixed with dry sand, in order to separate them as much as possible; they are also very light, and therefore a quiet still day should be chosen for sowing. The seeds should be trodden in after sown, previously to being raked in. The ground should be deep dug, or half-trenched and drilled in rows, twelve or fourteen inches apart. In strong stiff soils, cover the seeds in the drills with vegetable mould, or any other light dry mould, most conveniently at hand.

As the young plants are liable to be destroyed by insects, the better practice is to sow thick. The middle of May is a good time to sow carrots, as by that time, the grubs will have attained their fly-state before the plants come up. In sowing all general crops, it is advisable to sow at two or even three different times, so that if one crop be destroyed, another may succeed.

SOWING PARSNEPS.

A full crop of parsneps should now be sown, if not done in March.

TRANSPLANTING CELERY.

The celery-plants, which were sown in February or March, for an early crop, will be fit to prick out about the middle or latter end of this month, into a nursery-bed of rich light earth.

Prepare for this purpose a piece of rich ground, form it into beds, and rake the surface even; then thin out a number of the best plants from the seed-bed, and plant them into the above, at about three inches apart every way; then give a moderate watering, and repeat it occasionally till the plants have taken fresh root. The ground for this purpose cannot be too well manured, and if they be pricked out into rotten dung alone, they will be the stronger.

The plants should continue in the beds a month, at least, to gain strength before they are planted out finally into the trenches.

As these early sown plants, after they are fit for use, will not remain long before they run up to seed, a great number of them should not be planted out.

Sow some celery-seed, in the first or second week of this month, to raise plants for succeeding those, which were sown in March.

Dig for this purpose a bed of rich light earth, and make the surface smooth; sow the seed thereon tolerably thick; and either rake it in gently, or otherwise cover it about a quarter of an inch with fine earth, and, in dry weather, give moderate waterings, both before and after the seed comes up.

CELERIAC.

Celeriac sown last month, when fit to be transplanted, should be done on a bed of light rich mould, and abundantly supplied with water.

SPRING-DRESSING ARTICHOKES.

For directions, see *March*.

SOWING LEEKS.

If a full crop of leeks were not sown last month, let that be done without delay.

ASPARAGUS.

If the state of the weather, or any other circumstance, have hitherto prevented the asparagus-beds being dressed, and young beds made, and sown, let that now be done. For full directions, see *March*.

LETTUCES.

Continue to sow and transplant lettuces of all sorts; the better the ground, the more luxuriant will be their growth. Sow each sort separately, and in transplanting set the plants from ten to twelve inches apart, after which, water them occasionally till they have taken root. Repeat the sowings and plantings once every fortnight, or three weeks, that a regular supply may be obtained.

RADISHES.

Sow radishes of different sorts every week during the summer. They may be sown in drills between lines of peas, or on spare borders where they are partially shaded. Give plenty of water in dry weather: if this be not attended to, they will be hard and unfit for use. Thin the crops already sown, each from two to three inches apart.

SMALL SALADING.

Sow small salading about once every week or fortnight; the sorts are cresses, mustard, rape, &c.

Dig a bed of light mellow earth for these seeds, and rake the surface fine. Draw some flat shallow drills, sow the seeds therein, each kind separate, and cover them lightly with earth.

Water them moderately, if the weather should be dry, which will greatly promote their growth. If those in the open ground be attacked with hoary morning frost, and a sunny day succeed, water the frost off before the sun shines strong upon them.

SOWING NASTURTIUMS.

Sow nasturtium-seed: draw a drill or drills, about an inch deep and a yard asunder, or a single drill under any fence, &c. on which to train the plants in their running growth; sow the seed moderately thin, and cover it in regularly.

PURSLANE.

Purslane may be sown now, if warm dry weather, on a bed of light rich earth, in the common ground. Sow it either in drills six inches asunder, or on the surface, and rake it in lightly and regularly. Water the bed often in dry weather, and shade it from the hot sun till the plants have acquired a little strength.

But if cold or very wet weather, sow some either in a hot-bed, under the shelter of glasses, or in a warm dry border and defended from cold, &c. This plant is by many people much esteemed in summer salads.

SOWING ONIONS.

Where circumstances prevented the principal crops of onions from being sown last month, let that now be done; for the distance between the drills, and preparation of the ground, see *March.* However, in strong wet soils, onions may be still sown with better success, than if sown earlier, particularly if the ground were wet.

TRANSPLANTING ONIONS.

Onions may be successfully transplanted, particularly the crops sown in autumn. Prepare a piece of ground moderately rich, which has been well manured for the preceding crop. Let it be well dug, and rendered fine with the spade. As the process of digging is carried on, draw drills an inch and a half deep, and twelve inches apart. Having drawn the first drill, proceed to draw from the autumn crop, a sufficient number of plants, so as to leave a crop on the ground; let them be drawn carefully. If the ground be hard, loosen the whole; this will not only enable you to thin out the crop, without injuring the plants, but will materially promote the growth of those which remain. Having drawn a number sufficient to plant one drill, proceed to lay them regularly into the same, observing not to cover the bulb of them too much. The fibrous roots are all that ought to be covered, and this should be done to the thickness of an inch and a half. Press the mould which covers them gently down with the back of a spade, and give them a gentle watering over head; prefer to cover with light sandy loam or vegetable mould. In a few days, if showery weather intervene, the whole crop will take root in the ground. If the weather be dry, let them be watered every afternoon, with a strong garden engine, which can be done without treading the ground. Onions sown on slight hot-beds may be transplanted in the same manner.

Transplanting onions is by no means a new feature in gardening. The Neat-House gardeners of Battersea, adopted this practice at a very early period, and it was not unknown to the cottagers in many parts of England. It has, however, been revived by Knight, Warre, M'Donald and others, and deserves to be more generally adopted. Knight's opinion is, that "Every bulbous-rooted plant, and indeed every plant which produces leaves, and lives longer than one year, generates in one season, the sap or vegetable blood which composes the leaves and roots of the succeeding spring; and when the sap has accumulated during one or more seasons, it is ultimately expended in the production of blossoms and seeds. This reserved sap is deposited in and composes in a great measure the bulb; and moreover, the quantity accumulated, as well as the period required for its accumulation, vary greatly in the same species of plant, under more or less favourable circumstances."

"Thus the onion, in the south of Europe, acquires a much larger size in a single season, than in the colder climate of England; but under the following mode of culture, two summers in England produce nearly the effect of one in the southern parts of Europe, and the onion assumes nearly the form and size of those thence imported. Spanish or Portuguese onions are sown at the usual period in the spring, very thick, and in poor soil, generally under the shade of a fruit-tree; and in such situations, the bulbs in the autumn are rarely found much to exceed the size of a large pea. These are then taken from the ground, and preserved till the succeeding spring, when they are planted at equal distances from each other, and they afford plants possessing much greater strength and vigour than those raised immediately from seed. The bulbs, thus raised, often exceed five inches in diameter, and being more mature, preserve through the winter a perfect soundness."

SOWING FRENCH BEANS.

At the beginning of the month, French beans may be sown in a light, rich, warm border, and towards the close of the month, they may be sown on a more open spot of ground. By the adoption of this plan, a regular succession of crop will be obtained. In the first sowing, we would recommend the speckled dwarf; and for the latter sowing, the negro, Battersea, or the liver-colored; they must be sown in drills about two feet apart, and two inches deep, or the beans may be dropped in by the hand at an inch distant; the effect of this will be, that a more even crop will be obtained; they should also be sown in dry weather, as wet is apt to destroy the seeds in the ground. Do not tread the ground, but cover and dress it with the rake.

If it be required to have a very early crop of French beans, it will be necessary to sow them in pots or boxes, and placed in the hot-house, or in a hot-bed. The seed may thus be sown about the beginning of the month, and when arrived at a proper size may be planted out in fine rich earth at the bottom of a wall or hedge, having a southern aspect. If the plants be set in single lines, they must be planted at three inches distant; but if in double lines, about a foot apart, and at four or five inches distant in the line; the plants will thereby be kept as near as possible to the wall or hedge, and reap the full benefit of its shelter. Particular care must be taken not to plant too deep, and after every planting to give a little water.

Scarlet runners may now be sown; and if another crop be sown in July, it will tend to prolong the season of French beans to the very latest, as they will continue bearing until they be destroyed by the frost. For the latter purpose, the white runners are equally good.

The climbing sorts of French beans are not so hardy as the dwarfs, therefore only a few should be sown, unless the weather be fine. The beginning of next month will be time enough for full crops. They should be allowed four feet between the rows, as they grow very tall, and four inches apart in the lines.

SOWING TURNIP.

Turnip, to succeed those sown last month, should be sown at the beginning, middle, and end of the month, either in drills an inch deep, or broad-cast thinly. Sow the early stone, or the early white Dutch. They may be sown between crops of peas, asparagus, or sea-kale, provided the soil be light. Refresh plentifully with water, and sprinkle a little wood-ashes, if the fly make its appearance. Keep them clear of weeds, and ultimately thin them out to three or four inches apart.

LOVE-APPLES.

Sow love-apples for their fruit to pickle, and for soups, &c., if omitted last month; this is still a proper season for that work, sowing them in a hot-bed, as directed in March.

SOWING AND PLANTING SEA-KALE.

This plant is indigenous to many of our sea-shores, growing in fine drifted sand, sometimes covered partially with small stones and gravel. In light sandy garden-soils, it comes to perfection with little care, but in strong clayey soils it is often apt to rot in winter. In preparing ground for sea-kale, if the ground be naturally strong, it should be trenched to the depth of three feet, if it will admit of that depth, and well manured. Divide the ground into four-feet beds, with alleys eighteen inches wide; throw out the mould of the alleys to the depth of ten or twelve inches, which mould being laid on the beds, will raise them from fifteen to eighteen inches above the bottom of the alleys, which will render the beds dry. If the ground be particularly stiff, lay on a quantity of fine sharp sand, which, if properly mixed in the process of trenching, will render the beds sufficiently light for the cultivation of this excellent vegetable. About the middle of this month, if the beds be prepared as above, proceed to draw two drills in each bed, about two inches deep, in which the seeds must be sown. Sow moderately thick, so as to secure a crop, which afterwards will be thinned out to twelve inches apart. The turnip-fly and wire-worm are great enemies to all the plants of the class *Tetradynamia.* The best remedy for the latter, is to have them picked out of the ground by the hand; the former may be prevented from doing much injury, by a circle of quick-lime strewed round the plants.

Sea-kale may be cultivated by rearing the plants from seed on a seed-bed, and, when a year old, transplanting them into beds prepared as above, at the distance of eighteen inches each way; but in setting young plants, place them in patches of three plants each, taking care, in removing them from the seed-bed not to injure the tap-roots. Sea-kale plants of a proper age may be had of most nurserymen, but, in well regulated gardens, a part should be annually sown, so as to have a supply always at hand. However, where circumstances will admit, we would advise to sow the seeds in the beds, where they are to remain to come to perfection. This is attended with much less trouble, and if the beds have been properly prepared, the plants will become stronger than those which have been transplanted.

Sea-kale is propagated by some of the most eminent gardeners in the vicinity of London, by cutting the roots of the old plants into pieces about an inch long, and planting them in drills like potatoes. By this means, the buds will spring and find their way to the surface with greater certainty than if planted by the dibble; by which latter process, many of them run a chance of being placed with their root-end uppermost, and consequently be unproductive of shoots.

BLANCHING SEA-KALE.

The sprouts which rise at this time, and in May, being properly blanched, are held in high estimation. The process of blanching is performed in a variety of ways. The most convenient and the best for sea-kale, which is not forced, is to cover the beds in autumn with leaves raked up from the woods or pleasure-ground, covering each bed in thickness according to the strength and age of the plants, giving the greatest covering to the oldest or strongest roots. The covering may be from five inches to fifteen when first laid on, and over that, place a slight covering of light littery dung, to prevent the leaves from blowing about; this covering is to remain on until the crop be all cut, when it may be taken away, and the beds dug over, or when, from particular circumstances, this has not been attended to in autumn, as at this time the buds begin to appear, fork the beds regularly over, and cover the plants from twelve to fifteen or eighteen inches with saw-dust, or rotten tan, when it can be conveniently procured; if neither can be had, break the mould on the surface of the beds as fine as possible, and mould up the plants with it. But where there are blanching-pots used for the crops of sea-kale, which have been forcing during the winter, they may be used with propriety to blanch the spring crops, as they will now be useless in the forcing department. Place them over the plants, and draw a sufficient quantity of mould round their base to prevent the admission of air. The action of the rays of the sun penetrating through the pots will, in a considerable measure, accelerate their growth. Large flower-pots turned down upon them will answer the purpose, provided the holes in the bottom of the pots be stopped; the plants will draw sufficient air for their sustenance, however well the holes may be stopped. For blanching sea-kale, see further in the *Forcing-garden.*

When the young stems are about three or four inches high, remove the leaves where they have been used, carefully with a fork, and cut them off, but so as not to injure the remaining buds, which are springing from the same root.

A succession of gatherings may be continued for five or six weeks, after which period, the plants should be uncovered and their leaves suffered to grow, that they may acquire and return a sufficient quantity of nutriment to the roots for the next year's buds. The flowers, when the seeds are not wanted, ought to be nipped off with the finger and thumb as long as they appear, as they tend considerably to weaken the plants.

SOWING CARAWAY AND FENNEL.

Sow a small quantity of each of these on a light rich border; a small spot will produce enough for an ordinary family.

SOWING AND PLANTING MARJORAM.

During the whole of this month, marjoram may be sown on a bed of light earth, and may be afterwards transplanted into rows nine or ten inches distant, and about three or four in the line. If it be required to have an early supply of knotted or sweet marjoram, a little may be sown about the beginning of the month, and be covered with a hand or bell-glass, for the purpose of bringing it forward. Pot-marjoram may be easily raised by slips taken from the roots.

SOWING BASIL.

The directions already given for marjoram are applicable to this plant; or a little seed may be sown in a flat box, or pot, placed in any of the forcing-houses, and afterwards transplanted.

PLANTING MINT.

Sweet mint, or spear mint, is generally raised by slips of the root, and may be either planted closely in a bed, or in lines six or eight inches distant. It is a herb, which will thrive in almost all soils, but flourishes best in a light moorish earth. A few rows, or a small bed, are sufficient for a middling-sized family.

If it be wanted early for house-lamb, the roots should be covered with a hand-glass about the beginning of February, which will considerably advance its growth.

SOWING BORAGE AND MARIGOLD.

Sow in every respect as directed above for caraway and fennel.

PLANTING SAGE.

This herb may be propagated either by cuttings, or by slips off the root. This is the proper season for propagating it by slips, but the end of July, or the beginning of August, is the most seasonable time for its propagation by cuttings. Although they will thrive in almost any soil, yet a light soil is preferable; wet ground is by no means congenial to them, as in winter they often perish in it: a few slips will be sufficient, if wanted only in the green state; but, if it be wanted to dry for winter use, a greater number will be required. Two kinds are used in the kitchen, the green and the purple; the variegated sorts are reckoned ornamental plants, and seldom cultivated for the kitchen.

PROPAGATING MEDICINAL PLANTS.

This is a proper time for sowing, or otherwise propagating all medicinal plants, such as angelica, hyssop, lavender, rue, wormwood, rosemary, balm, scurvy-grass, myrrh, burnet, &c.

SOWING AND PLANTING THYME.

This herb may also be propagated either by seed or from slips. The seed should be sown on a light soil, and when the plants are about two inches high, they may be planted out in lines, about nine inches asunder, or the slips may be planted at the same distance; the seedlings may be thinned out, without transplanting, to about six inches square.

PLANTING TANSY.

This herb will thrive in almost any soil, and may be propagated by slips off the root; very few will suffice, and if they be planted in patches, sufficient space must be given them to bush: but if they be planted in a row, the sets must be placed twelve or fifteen inches distant.

SOWING AND PLANTING SAVORY.

The same directions will apply for the propagation of savory as those which have been given for marjoram. If the sweet sort be wanted at an early period, it may be brought forward by placing hand-glasses over the roots, or by planting the slips in a frame with lights. Winter savory may also be propagated in the same manner by slips.

PLANTING TARRAGON.

There are three methods of raising this herb, either by slips, cuttings, or seed; if the former be adopted, less space will be required, and it will succeed, if the cuttings be made in August. A wet soil does not suit it; it is apt to perish in it in the course of the winter.

GOURDS AND PUMPKINS.

The fruit of these plants being used when young, and in their more advanced and mature growth for culinary use, a few may be raised for that purpose.

They are only propagated by seeds, which should be sown in pots or shallow pans, in any light rich mould, and placed in a melon or cucumber-frame to forward their growth; or where many are wanted to be raised for planting out in the pleasure-garden, or for training on walls or fences, or for hiding any disagreeable object, for which, from their rapid growth and large leaves, they are admirably calculated, they may be transplanted, when in their rough leaf, into pots of the size called thirty-two's, one plant in each, and forwarded on a slight hot-bed. When fully established, air should be freely admitted every day, so as to inure them by degrees to meet their final transplantation in May. If the seeds be sown as above directed about the middle of the month, they will be in a proper state for transplantation about the end of May, which is as soon as they can be planted out with safety. The more curious sorts, either for their size or singular forms, will ripen their fruit in most seasons, if sown on a slight ridge of hot dung, and left to grow to maturity where they are sown, if only covered with hand or bell-glasses; but this mode of culture is only applicable to situations, where neatness is less attended to than convenience. In whatever situation they may be planted, it is necessary that they be set in a rich compost, three-fourths of which should be rotten dung.

DESTROY SLUGS, &C.

When slugs, caterpillars, &c. begin to appear, turn young ducks into the garden, once or twice a week; but never let them remain longer than two or three days at a time, as they soon tire of their food, or become indolent from satiety. While in the garden, they should have no food given them; but a little water is very necessary, if there be none in the garden.

But the most effectual method of preventing the ravages of the slugs, is to have them gathered by the hand every morning, as long as they appear numerous, carefully looking over those crops to which they are the most attached. If this method be slow, it is nevertheless sure. The market-gardeners in the vicinity of London scatter the leaves of cabbages, or lay patches of straw upon the ground, under which the slugs retreat in the morning before the effects of the sun are too powerful for them; these leaves, or straw, are examined during the day, and all the slugs are either gathered and destroyed, or are well sprinkled with lime water, which is certain to kill them.

WORK TO BE DONE IN THE CULINARY GARDEN.

Let all the walks in, and connected with the kitchen-garden be now laid down, if not done in March; nothing gives a garden a neater appearance than the walks being kept in good order. Let all the coverings that may have been used to protect either winter or early spring crops be now cleared away. Rough dig all vacant ground, and hoe and rake all the small borders. Use the hoe freely among crops of winter onions, spinach, &c. Destroy all weeds as they appear, particularly the various species of *Veronica*, and other early annuals, which, if not attended to, would spill their seeds on the ground, and produce them in a thousand fold. Have all roots, docks, dandelions, and similar weeds, carefully dug up with a fork, and immediately carried off in a basket to the woods. Let order and neatness be your constant aim. The garden, although appropriated solely to the culture of culinary vegetables, and not flowers, is not to be kept, like the garden of the sluggard, overgrown with briars and thistles. See every evening that all the tools used throughout the day have been carefully removed to the tool-shed. Nothing indicates carelessness more than seeing tools left in all directions, independently of the confusion which it makes, when they may be wanted on the morrow. Be careful to destroy all snails and slugs, which at this season are invited abroad by the gentle showers of rain peculiar to the season, for if they be suffered to increase, they will become very troublesome and destructive to many of the crops.

After a shower of rain draw the earth up to the stems of cabbages and cauliflower-plants, which were planted either in autumn or early in the spring. This is absolutely necessary, to guard their stems from the sun and wind, which dry and harden them; but, in performing this operation, care must be taken not to draw the earth up into their hearts, which will destroy them. Hoeing at this season not only gives a neat appearance to the surface, but also promotes vegetation in the plants, and in dry weather prevents the too rapid evaporation of the moisture in the soil. As the operation of hoeing proceeds, let the whole be neatly raked over, which will destroy those weeds which the hoe may have left.

MAY.

PLANTING BEANS.

Plant Windsor, Toker, or Sandwich beans, in lines three feet apart; or the long-pod and white-blossomed will succeed equally well. If they be planted three feet apart, a row of savoys, cabbages, or broccoli, may be set between them, when these plants are strong enough to plant out; or, if they be four feet apart, then two rows of either of them may be planted between them, which will turn the whole of the ground to the best account. If a supply of young beans be wanted, it will be advisable to plant them at the beginning, middle, and end of the month. If there be choice of soil, allow them rather a damp situation at this season. Hoe and earth up the crops of beans already above ground, and keep the whole clear of weeds.

It will be proper to top those beans which are in flower, in order to promote the free setting of the pods. This should be particularly attended to in the early crops, for it will not only make them swell faster, but will forward them into fruit at least a week sooner than those which are allowed to run; for, having no advancing top to nourish, their whole strength goes to the nourishment of the fruit. Observe to let the stems be first advanced to such a height, as to have a sufficient quantity of pods; the early mazagan may be topped when about two feet high, and the larger sorts when from two feet and a half to three feet or three feet and a half high.

SOWING PEAS.

To have a regular supply, let some be sown at least twice in this month; but where constant supplies of young peas are wanted, three or four sowings will not be too often, and there will be the greater chance of success in the late sowing. It is good practice not to sow in too large quantities at any season; the better plan is to sow oftener, and to use a variety of sorts, so that when one crop is exhausted, another will be ready to succeed it.

The best sorts to sow at this time are the marrowfats, particularly Knight's tall marrow, which, if sown in good ground, will yield abundantly, and the dwarf green imperial marrowfat; also the Spanish moratto, green and white rouncivals, being fine large sorts; likewise any of the hotspur kinds, and Prussian peas. Those that are sown any time in this month will yield tolerably good crops toward the latter end of July, and in August.

This is now a proper time to sow dwarf peas. These sorts seldom grow above two or three feet high; some not above fifteen or eighteen inches, but are mostly great bearers; the pods small but numerous, and the peas, while young, eat sweet and good; those sown at this season will generally be more productive than the larger kinds, although it be not so advisable to sow in large quantities for any principal crops. Sow them in drills two feet or two and a half apart.

Hoe, and let some earth be drawn up about the stems of the crops of peas which were sown in April, for this will strengthen the plants considerably. The early hotspur peas now in blossom, in warm borders, may be topped, as directed for beans; it will cause the pods to set and swell more freely, and will be fit to gather sooner.

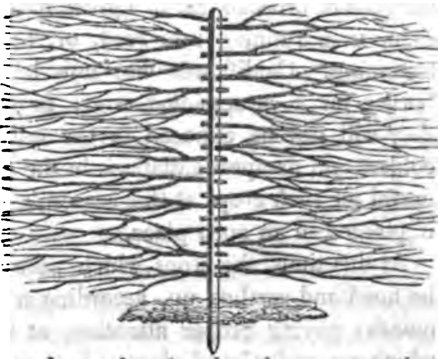
STICKING PEAS.

Place sticks to rows of peas, according to the growth of the different young crops, for the plants to climb upon; this should generally be done when they are about six or seven inches high.

A great advantage is derived from allowing sticks of a proper height, for the different sorts of peas to climb upon; for the produce is generally not only much superior, but more abundant, often even double the quantity, or more, than from those that are permitted to run upon the ground.

The sticks for this purpose should be from four or five to seven feet high, according to the growth of the different sorts of peas; they should also be well furnished with small lateral branches, that the plants may readily take hold without falling on the ground, and they should be prepared in a fanned manner, so that the side branches extend only the way of the rows; for this purpose, no wood is so good as beech-branches, as they naturally spread out like a fan. Some advise that they should be placed on the most sunny side of the rows; at least towards the east or mid-day sun, where the position or range of the rows admits; for the sun will naturally incline the plants that way, and they will more readily catch the sticks, which should be placed at such distances in the rows that the branches of each other may meet. Others place a row of stakes upon both sides of the row, and by this means the straw is better kept up than when only one row is used.

The difficulty of procuring sticks for Knight's marrow pea, has deterred many persons from cultivating that excellent vegetable. An anonymous correspondent, however, in the Gardeners' Magazine, considers that he has superseded that difficulty by the following invention, which consists of an upright stake, or standard of oak, three inches by one and a half inch, and about seven and a half feet long. Holes are bored through this stake with a half-inch auger, about three inches distant. Some good branching pea-sticks are then procured, from three feet to five feet long, and beginning at one side at bottom, are placed in the holes in such a way as to make them touch and form a complete fan. The oaken standard, when complete, shows sufficient pea-sticks for eight or nine feet length of row, six feet high. It is driven about eighteen inches into the ground, so as not to be shaken nor moved by the wind.



The sticks generally used are elm, but hazel, or any other which is spreading, with small twigs or sprays will do equally well.

STOPPING PEAS.

Stop the leading shoots of the most early crops when in blossom, which accelerates the setting and maturity of the fruit: this diverts the growth into the pods just forming, and forwards them in a considerable degree. The time for stopping is just when the flowers on the lower part of the stalk begin to fade. The plants need not be shortened more than an inch or two. This is only applicable to early crops. It would be an endless task upon a large scale, although, to a certain extent, it would be beneficial to all.

SOWING AND PLANTING CAULIFLOWER.

Towards the latter end of this month, cauliflower may be sown for a late, or for a last crop of the season, on a free open spot of light earth. The crop for a winter supply is to be raised from this sowing, and proper attention should be paid to give them a regular supply of water, accordingly as the state of the weather may require it. If the weather be very dry and the sun powerful, an occasional shading will be beneficial, so that the plants may be kept growing at as rapid a rate as possible. This is of much importance to the whole of the brassica tribe, particularly so to cauliflower and the varieties of broccoli, as, in a great measure, we thereby prevent them from running into seed, or, as it is technically called, buttoning. Cauliflower may now be planted out on a north border for a successional crop; or in a shaded spot, where they will not be exposed to the full power of the sun; the coldest and dampest situations in the garden will be the most useful tor such crops at this season, as they will not thrive well if planted in an open place.

At this time, the crops which were formerly planted should be hoed and earthed up, according to the directions given last month; paying proper attention, at the same time, to those which are under hand-glasses, in regard to air and water.

Examine the early crop, and if on any of them the flower begins to appear, it will be proper to break a leaf or two upon it, for the purpose of shading it from the sun, and at the same time of defending it from the rain. By this means, the flower is not only blanched, but its delicacy is increased. This examination of the plants should be frequently attended to, not only with the early but also with the late crops; for, by adhering to the system of breaking down the leaves on the flower, the blowing of it is considerably retarded in hot weather. The crops should be freely watered in dry weather, and a basin should be formed for the purpose of retaining the water round the roots of the plants.

SOWING BROCCOLI.

Broccoli for a full crop should now be sown on a rich spot. Sow each sort separately, and attend in dry weather to water them freely. The sorts recommended for last month are now also to be sown, to which may be added the purple Cape, green Cape, Grange's early cauliflower broccoli. The white broccolis are supposed to be less alkalescent than the purple, and therefore are by many preferred.

PLANTING BROCCOLI.

Those broccoli-plants which are fit, should now be planted out at the distance of two feet each way. Let the ground be well prepared, by giving it a large proportion of manure, and digging it well. In planting, take especial care not to bury the hearts of the plants. If the weather be dry, give a good watering, and occasionally repeat it, till the plants have taken root.

It is often the case, that old gardens are infested with an insect, which insinuates itself into the roots of the brassica tribe, and causes the well-known disease called by gardeners the *club*. The only means of getting rid of this destructive disease, is by removing the cause; and this is to be effected by trenching the ground three feet deep or more, if possible, thereby burying the insect and its eggs beyond the possibility of its soon returning to the surface. Where this mode cannot be effected, the evil may be partly cured by bringing in a quantity of fresh loam from a common or field, and digging it in; this will greatly benefit the broccoli, and be of much service to succeeding crops. A proper attention to a rotation of crop will also go far to eradicate this evil.

In planting broccoli, as well as all the other plants of the brassica tribe, avoid, if possible, planting upon ground which has been under the same crop the preceding season.

In a communication in the Horticultural Society's Transactions, by Mr. M'Leod, Cape broccoli is recommended to be grown without transplanting, and the success of this plan has been proved to be most complete. In the end of May, the ground is prepared and firmly trodden, the seeds are then dropped in, in rows two feet apart, and three or four seeds are put into each hole. When the seeds vegetate, they are all destroyed, excepting the strongest, which are protected from the fly by sprinkling a little soot on the ground. During the time the plants are advancing, the ground is frequently stirred with the hoe, and the plants are only once earthed up during their growth. Broccoli of a great size, cultivated in this way, has been exhibited before the society, and the same mode of culture is recommended by Mr. M'Leod as applicable to spring-sown cauliflower, lettuces, and many other vegetables, avoiding transplanting as much as possible. In this we perfectly concur with him, having experienced the advantage of obtaining better and more certain crops of lettuces, and many other summer crops of vegetables, when matured upon the spot where they were sown. Transplanting during the summer months, when plants are in an active state of growth, obviously gives a check to vegetation; and it is an established doctrine amongst gardeners, that such checks tend to produce a disposition, not only in annual vegetables but in fruit-trees also, to attain a state of maturity much sooner than those which have experienced no such check. The longer, therefore, that such crops as broccoli can be kept growing freely, the finer will their produce be.

CABBAGES.

Transplant spring-sown cabbage of all sorts for autumn and winter use.

An open situation should be allotted to them; however some may be planted between rows of early cauliflowers, or wide rows of garden or French-beans.

But where there is ground to spare, it will be more advantageous to plant these crops in an open compartment by themselves. Plant them out, if possible, in moist weather, in rows two feet or two and a half apart, and about two feet distant in the lines: as soon as they are planted, give each a little water.

Earth up the early and general crops of cabbages as they advance, and if the weather be dry, give occasional waterings. The early crops will now be advancing to maturity, and may be forwarded in cabbaging, if the leaves be tied together with strings of matting or willow twigs. This should be done when the leaves begin to turn inwards. Such as have run to seed should be pulled up; nevertheless any that show signs of superior qualities, either of being more early or better formed than the others, should be allowed to stand and preserved for seed. It is only by making observations of this kind, that any expectation can be formed of procuring improved vegetables.

Sow sugar-loaf cabbage-seed, and any other close quick-hearting kinds, for summer and autumn coleworts, and young autumn cabbages.

BORECOLE.

Sow borecole for next autumn, winter, and spring use, if not done in March and April.

This is a useful plant, of the open cabbage tribe, and very well worth raising in every kitchen-garden, for the service of a family. There are many sorts, none of which form close heads like the common cabbage or savoy, but always remain open and loose in the heart; but they have, nevertheless, great merit for their extreme hardiness to endure cold, and are excellent for winter and spring use.

Some of these plants run up with long stems, from two to three or four feet high, crowned by a large, spreading, bushy head of thick, fimbriated, curly leaves. They are very hardy, and capable of standing almost the severest winters. In the months of February and March, their long stems will be very productive from the bottom to the top in numerous fine young sprouts; all of which, as well as the principal head, boil remarkably green and tender.

The seed must be sown the first week in the month: but, in order to obtain strong, full-grown plants, with large stocky heads, and strong stems to produce a large supply of sprouts, a first crop should be sown in March or April, as directed in those months.

In dry weather, give the bed now and then a moderate watering. The plants will be large enough to plant out in about six weeks after the seed is sown; but when they have two or three leaves, thin and prick out a number from the seed-bed four inches distant, that they may attain a proper size for final transplanting.

Those planted out finally in June, July, and August, will produce large heads fit to cut in October, November, or any time during the winter, till the following spring.

Several sorts of borecole are cultivated by the cottagers and farmers in the north, particularly the Scotch kale, purple, or brown kale, German greens or curlies, all of which are extremely hardy. It is greatly to be desired that the peasantry of England would cultivate them more generally, as they would afford an excellent vegetable in winter and spring, particularly in those counties where much animal food is eaten. They may be planted on ground that has been occupied by early crops of peas, potatoes, or such like crops; or may be planted between rows of late peas, scarlet runners, &c., and will therefore occupy the ground when these latter crops have been removed.

SOWING AND PLANTING BRUSSELS-SPROUTS.

The directions for broccoli will apply to the sowing and planting of Brussels-sprouts; the seed may now be sown, or the plants pricked out.

SOWING AND PLANTING SAVOYS.

Savoys of different sorts may now be both sown or planted, as directed for Brussels-sprouts.

SALSAFY, SCORZONERA, AND SKIRRETS.

Salsafy, scorzonera, and skirrets, may yet be sown, if not done in April; but sow as early in the month as possible.

The early crops that are above the ground should be first thinned to two inches apart, and about the end of the month, or beginning of June, finally to four inches.

PLANTING ARTICHOKES.

About the beginning or the middle of this month, artichokes for a late crop may be planted. See *March*, for the method of planting them. During the first week or two, let them have, if the weather be dry, a plentiful supply of water. The heads of these plants will come in late in the season, and will continue to yield their produce until the frost destroys them.

ASPARAGUS.

Asparagus will now be fit to cut for use.

The shoots of these plants, when they are advanced about two or three inches above ground, are fit for gathering while the top bud or head remains compact, but which, if permitted to run, soon becomes open, loose, and of less estimation.

When proceeding to cut them, be careful to thrust the knife down close by the side of the shoots intended to be cut, lest you wound or destroy the young buds that are coming up in succession, and do not yet appear; cutting the shoots off slanting, about three or four inches within the ground.

Let the beds be now carefully cleaned from weeds: either give a careful hand-weeding; or, with a small hoe, on a dry day, cut up all weeds clean within the surface.

Few attempts at blanching the tops of asparagus have been made in this country, otherwise than by having an abundance of loose earth on the surface, through which they spring; but Lasteyrie informs us (*Col. de Machines*) that joints of cane are placed separately over each stalk in Spain; and Bauman, of Vienna, in a communication to the Horticultural Society, on the culture of asparagus in Austria, says, "to give asparagus-shoots, growing in the open air, as much length and tenderness as possible, there is inserted over each stem destined to be gathered, as soon as it shoots above ground, a wooden tube or pipe eighteen inches high, and one inch in diameter. (Hort. Trans. vol. iii. 34.) We have practised, for the last two years, covering a part of the asparagus-beds with rotten tan, or saw-dust, which has answered the purpose tolerably well. But as this vegetable is not generally preferred in a blanched state, this practice is not likely to become general.

LAYING DOWN WINTER ONIONS.

Examine the winter crop, and wherever the onions are shooting for seed, pick out their heart-buds. Remove all weeds from amongst them, and then lay down the crop, which is done by bending the stems down flat, just above the bulb. This operation may be performed by the hand, but much time is saved, by two persons with a pole or the handle of a rake, each holding one of the ends, in such a manner as, when walking up the alleys, to strike the stems about an inch or two above the bulb. This process, which is called "laying over," is of great benefit to all crops of onions, as the growth of the stem is thereby considerably checked, and the whole nourishment thrown into the bulb. It is particularly beneficial to the late crops in bad seasons, for a stop is thereby put to the luxuriance of their growth, and are, consequently, in a great degree, obliged to ripen.

GENERAL CROPS OF ONIONS.

The general crops of onions should, towards the middle or end of the month, be cleared from weeds. This operation should be performed with a narrow hoe, which will not only destroy the weeds, but, by stirring up the surface, will contribute much to the growth of the crop. At the same time, thin out the crop to the distance of from three to four or five inches, according to the sorts.

Where young onions are in constant demand, it will be better to reserve a crop unthinned for that purpose, observing to thin them regularly as they are used, leaving a sufficiency of the strongest plants for a general crop. The oftener that the crops of onions are stirred up with the hoe in dry weather, the better will they bulb, particularly in stiff soils.

TRANSPLANTED ONIONS.

The onions transplanted last month will require to be gone over with the hoe, and the surface stirred among them. Any of them that appear shooting into seed should have their heart-buds picked out, as has been previously directed for winter-onions, that have not been transplanted.

PRICK OUT AND PLANT CELERY.

Prick out from the seed-bed some of the celery-plants sown in March. Dig for this purpose one or more beds of light rich earth, and rake them even; then draw out of the seed-bed some plants in a thinning manner, and prick them into the other beds, three to four or five inches distant: give directly a moderate watering, and repeat it occasionally till the plants get fresh root, and, being thus planted, they are to remain to nurse a month, or five or six weeks, to acquire proper strength; then to be transplanted finally into trenches to remain for blanching, by earthing up as they advance in growth. Plant out the strongest celery-plants of former sowings. Choose a sheltered spot, or warm border; a few need only be planted at this time for the kitchen use, as they will be apt to run to seed. The trenches need not be deep, six inches being sufficient; if room be scarce, plant between rows of early peas on a south border.

SOWING CELERY.

Sow celery-seed for a principal latter crop, in the first or second week of the month. Dig a bed of light rich earth, and make the surface perfectly even; then sow the seeds pretty thick, and rake them in lightly.

In hot sunny weather it would prove very beneficial to shade the bed every day, from ten to three o'clock, till the plants appear. Likewise, let the bed, in dry weather, be refreshed every other evening with a light watering.

The plants from this sowing will be fit to plant out into trenches in July, August, and September, and to take up for the table from October till Christmas, and for a spring supply.

HOEING AND EARTHING UP POTATOES.

The crops of potatoes, as they advance, should be hoed and earthed up. If there be any vacant piece of ground, a late crop may be planted, which will succeed nearly as well, as if planted in April, but will not keep so well during the winter.

SPINACH.

Spinach may still be sown, where required in continued succession, sowing generally the round-leaved sort between rows of peas, by which it will be partially shaded from the sun, and not run to seed so soon as if sown in an exposed situation.

In some families, spinach is required in succession all summer: in which case, some seed should be sown every twelve or fourteen days, as the plants of the summer sowings soon run up to seed: sow the seed moderately thin, and rake it well into the ground; or sow it in shallow flat drills, from six or eight inches to a foot asunder, covering in the seed regularly.

Thin the young spinach of last month's sowing; eradicate all weeds: and where the plants stand thick, thin them moderately, especially those produced from the broad-cast sowing.

THINNING THE CROPS OF BEET.

The crops of beets which are in a forward state will require to be thinned about the middle of this month; this operation should, however, be performed gradually; nor should the plants be thinned out all at once. In the first place, they should be thinned to about two or three inches distant, and to five or six in a few weeks afterwards. A showery time should be chosen, or the earth should be settled about the plants by a liberal watering. The ground should be previously hoed, and closed well about their roots.

LOVE-APPLES.

Towards the end of the month, if the weather be favorable, plant out the love-apple plants reared in the hot-houses. These plants are of a trailing rambling habit, and require to be supported or trained against a wall or pales. In cold situations, they will require a southern exposure to ripen them, and to facilitate their ripening, the shoots should be shortened or topped, when they have shown a sufficient number of flowers and are beginning to set their fruit. All lateral branches should be removed, and as the fruit begins to ripen, pick off some of the leaves, in order to admit the sun to the fruit. In dry weather, they will require a plentiful supply of water; and as they are great exhausters of the ground, they should not be planted too near to the fruit-trees. In warm situations, they will bring their fruit to great perfection if planted on a bed of mould, made so as to slope to the sun; upon this bed, which should have a considerable inclination, they may be trained and pegged down like cucumber-plants, and, in many instances, they will emit roots at their joints, which will materially tend to strengthen them. The surface of this bed may be covered with plain tiles or slates, which will not only hasten their maturity, by increasing the heat on the surface, but also keep the fruit clean and free from any earthy particles, which might be washed upon them, during the process of watering, heavy rains, or the like. In whatever way they are grown, they should not be allowed to grow too rambling, for if not pruned, and kept within bounds, they will continue to extend themselves till killed by the frosts, and in that way expend that nourishment, which, by pruning off the superfluous growths, would be directed to the formation and maturity of the fruit. The whole plant is rather ornamental, but particularly so when in fruit; they may, therefore, be planted against the walls of houses, or in a favourable situation in the pleasure-ground, and in the most unfavourable ones they may be forwarded in large pots, and placed in any of the forcing-houses till they have fully formed their fruit, when they may be set out in a warm situation to ripen, or they may even be grown upon slight hot-beds, covered with a frame and lights, and trained like cucumbers. In unfavourable seasons, the fruit may be taken off in clusters, attached to a portion of the branch, while yet in an unripe state, and hung up in any of the hot-houses, where they will ripen in a few days.

PLANTING RADISHES FOR SEED.

The beginning of this month is the proper season for the transplantation of radishes for seed, and it should be done when the roots have attained their full maturity. The growth of them will be accelerated if the advantage be taken of showery weather.

The roots selected for seed should be long, and perfectly straight with short tops, and some attention must be paid to the color of the root. If the common red, or short-topped radish be the sort selected, the preference should be given to those that are of a clear pale red, as they possess the properties of crispness and mildness in a greater degree than those of a dark red color. If the salmon-radish be selected for seed, the palest colored roots should be planted.

The transplantation of radishes for seed is by no means a matter of minor importance, for were they allowed to run to seed in their natural bed, that degree of nicety could not be observed in the selection of the sorts, which is presented by the system of drawing up a number of roots, and choosing only those, which possess the proper requisites.

The roots being selected, proceed to plant them in rows two or three feet asunder, and about two feet from each other in the row. The situation should be open, and as soon as they are planted, a liberal supply of water should be given. The seed will be ripe in September.

The same directions are applicable for turnip-radishes, the roots of which should be of an orbicular form, of good color, and not of immoderate growth.

Radish-pods are in much request in most families for pickling, a sufficient supply can be obtained for that purpose from the plants left for seed. Choose the best-formed pods. It is of importance to gardeners to save as many of their own seeds as the circumstances of their situation will admit of, not altogether on the score of economy, but for keeping true or unmixed those seeds which are apt to sport into seminal varieties, such as the radish, most of the brassica, beets, and some others.

SOWING CARDOONS.

About the middle or latter end of the month, cardoons may be sown. The seed may be either sown where the plants are to remain, or on a bed of good earth, and afterwards transplanted into the trenches. A deep light earth is most congenial to the growth of cardoons, but it must not be of the richest kind. The leaves being large, require a considerable space, and are often blanched in the same manner as celery. They are chiefly used in soups and stews.

Trenches must be prepared on the same system as for celery, either longitudinally or crossways, about four feet from centre to centre, of the exact width and depth which a single spit will make them; the earth to be deposited on each side. A little compost manure must then be spread at the bottom of the trench, and the seeds dropped thinly, in a drill about an inch and a half deep, drawn exactly in the middle. The plants may be thinned out to about four inches asunder, when they have attained a few inches in height, but finally they must be thinned out to eight or nine inches.

GOURDS AND PUMPKINS.

Those sown on a hot-bed last month will be fit by the latter end of this month to be planted out. They may be planted to hide any old fence or wall, or on the ground by the sides of the walks. There are many curious sorts, some of the smaller of which may be introduced into the flower-garden, and trained to an upright pole or trellis.

Gourds are cultivated in the village-gardens of some parts of England for culinary purposes. The inhabitants grow them on dunghills, and train the shoots to a great length. When the fruit is ripe, they cut a hole in one side, and having taken out the seeds, fill the vacuum with sliced apples, adding a little sugar and spice, and then having baked the whole, eat it with butter. This is the melon of the gardeners of former times, the true melon being known to them by the name of the musk-melon. Gourds are much used on the continent in soups, and also stewed and fried in oil and butter.

VEGETABLE MARROW.

Vegetable marrow is a species of gourd, the *Cicader* of the Persians. It is propagated in the same manner as the other gourds, and about the end of this month may be planted out on a slight hot-bed, and covered with a hand-glass; or the seeds may be sown, where the plants are to remain; place a hand-glass over them, and they will come up, when all danger of frost is over. Accordingly as the runners extend, peg them down, they will strike root, which will greatly strengthen the plants. Give plenty of water in dry weather. It is useful for culinary purposes in every stage of its growth.

SALADS.

Continue to sow and transplant all sorts of lettuces, to admit of a succession. Give plenty of water, both to the newly sown and also to the transplanted ones. Tie up to blanch the forward crops of lettuces, choosing a dry day for that purpose; a few only should be tied up at once; this, however, must be regulated by the quantity required.

RADISHES.

Continue to sow successional crops of radishes: where wanted, give plenty of water to keep them growing rapidly; if that be not the case, they become hard. and unfit for use.

SMALL SALADING.

Sow small salading once a week or oftener, such as cresses, mustard, rape, &c. Sow another crop of Normandy or curled cress, it is to be preferred to the common cress, and is very useful for garnishing. Prefer a shaded spot for sowing all sorts of small salading during this and the two following months. When the seeds are sown, which should always be in drills, cover them with old mats, kept constantly damp, by watering them once or twice a day. These, however, should be removed as soon as the seeds begin to vegetate, and hoops should be placed over them, upon which the mats may be put during the heat of the day, about a foot above the ground.

CAPSICUMS.

If capsicums were reared last month on a hot-bed, or in pots in the forcing-houses, they may now be planted out in a sheltered spot under a wall; give them a supply of water accordingly as the state of the weather may demand.

SOWING TURNIPS.

This is a favourable time for sowing turnips, and by the latter end of July they will be sufficiently large for the kitchen. They will continue in good condition for a considerable length of time.

The early crops of turnips should always have a warm aspect, and the soil should be of the lightest and driest description. Sand or gravel, with a proportionate mixture of loam, is the soil best adapted for turnips, for if the land be heavy, or excessively rich, a rank taste is imparted to the root, and induces it to run too soon to flower.

The most successful time to sow the seed is in showery weather, or immediately after rain; should it be sown in dry or hot weather, a great risk is run of a total loss of the crop.

A piece of mellow ground should be chosen for this crop, and the seed should be sown moderately thin, and equal in every part; it would be advisable to sow it while the ground is fresh turned up, treading it evenly, and raking it regularly.

In this month the early crops will require to be again thinned, but this should be done gradually, and not too many taken away at one time. If the seeds have risen very thick, it may be proper to thin the broad-cast crops to three or four inches square, and those which were drilled to two or three inches in line; at a subsequent period, they should be thinned out to nine or ten inches square, and to five or six in line, if it be intended that the roots should grow to a proper size.

The operation of thinning should be performed when the rough leaves are about an inch in breadth, or at least before they attain a much greater size, as the work can then be accomplished with greater expedition and facility.

CUCUMBERS FOR PICKLING.

For cucumbers to pickle, see *Forcing-Garden.*

SEA-KALE.

If sea-kale were not sown, nor planted last month, let it now be done. For directions, see *April.* For forcing of it, see *Forcing-Garden.*

SOWING ENDIVE.

Endive may now be sown for an early crop; at the same time it must be observed, that the sowings of this month should never be depended on for a principal standing crop, as the plants are apt to run to seed; but if this vegetable be required at an early period in constant succession, it would be advisable to sow some seed at intervals during the month; and when the plants of each sowing have attained about three or four inches in height, then to select some of the strongest, and prick them out at the distance of about a foot.

The white, and a small portion of the green curled, are the most proper sorts to be sown at this time. However, a little Batavian, or broad-leaved, may also be sown for variety.

HERBS.

Propagate by sowing, cuttings, or dividing the roots, all sorts of herbs. For full directions, see *April.*

FRENCH OR KIDNEY-BEANS.

A full crop of kidney-beans may now be planted, as a succession to those sown in April, and the most proper kinds for this plantation, are the black speckled dwarfs, Battersea and Canterbury white dwarfs; the dun-colored and the large white kind may also be sown.

The drills should be drawn an inch deep, and two feet and a half distant, in which the beans are to be placed two or three inches apart; the ground must be drawn evenly over them, and the surface raked smooth.

The scarlet-runner, or any other of the running kinds of beans, may also be planted at this time, and as the majority of them are very productive, they are exceedingly profitable for the service of a family. There is a variety of the scarlet-runner that differs from it only in color, the seed and flowers being both white, but which in its manner of growth and mode of bearing has a perfect resemblance to the scarlet-runner; nor is it less deserving of our esteem in regard to the extent of its produce, and the length of time that it continues to yield its fruit.

It may be advisable, also, at this time, to plant the large white Dutch runners, they being an excellent bean, and the pods growing to a considerable length, but they cannot be recommended on the same principle as the scarlet-runner, for the length of time in which they yield their produce.

The drills for all the running or climbing sorts of kidney-beans should be at least four feet six inches distant, or a single drill may be drawn at the base of any vacant wall, paling, building, &c., and when the plants have attained their double leaves, and begin to push their runners, some tall sticks or poles should be placed for the plants to climb upon; or if they be planted in a row or drill at the base of a wall, some strong packthread, or junk, may be suspended from the top, and fastened at the bottom, and the runners will readily twine themselves round it to the height of eight or ten feet; they should then be topped, which will contribute greatly to the production of fruit on the lower branches.

For artizans and cottagers, the scarlet-runners are both profitable and ornamental for their gardens and cottages.

THINNING AND CLEANING CARROTS.

By the end of this month the crops of carrots will be considerably advanced in their growth, and every encouragement should be given to promote it; if the early crop have been sown broad-cast, it may be thinned out to three inches square; but if sown in lines, it must be thinned to one or two in line.

The operation of thinning may be done either by the hand or hoe, but when the crops are on an extensive scale, hoeing is the preferable method, not only as being the most expeditious, but also, that as it loosens the surface of the ground, it tends to promote the vigorous growth of the plants. It is a practice, although founded in error, but too commonly adopted by many persons, of thinning the carrots at one particular time, and, without observing any regularity in the process; but this should be studiously avoided, for it must be obvious, that a partial thinning must be productive of injury to that part of the crop, where the thinning has been neglected. Five or six inches are the proper distance at which the carrots should stand, in order that they may have full liberty to swell at the root; it is, however, recommended never to thin carrots when the weather is dry, but always to take the advantage of showery weather; should, however, this advantage not present itself, it would be advisable to give an immediate watering to the crop after the thinning has been completed, for if the drought penetrate to the fibres and tap-roots, the carrots become stinted in their growth, and their flavor is rank and disagreeable.

Those crops of carrots which are intended to be drawn gradually for the table, whilst they are young, should not be thinned at first to more than four or five inches distant; but the main crops, that are intended to remain to grow to their full size, should be thinned from about six to seven inches distant.

Carrots may still be sown with every prospect of success, particularly if the soil be strong and stiff. It is by no means bad practice to sow in April, May, and the beginning of June.

WORK TO BE DONE IN THE CULINARY GARDEN.

If the weather in this month prove dry, the growth of many esculent plants will be considerably retarded, particularly the beans and peas which are in flower, the blossoms of which fall off before arriving at maturity, and consequently are not succeeded by fruit. A certain degree of attention is therefore necessary, to give a regular supply of water to the growing crops; at the same time, it must be observed, that in promoting the growth of the crops, the weeds are also encouraged, which at this season of the year are very abundant, and which, if not timely checked, prove highly detrimental to the young crops, by weakening them to that degree, that they never afterwards recover their full strength. There is no work in the kitchen-garden which, at this time, requires greater attention than the eradication of weeds; many will now begin to perfect their seeds, which, being shed on the ground, will occasion a considerable degree of labor for several years to accomplish their extirpation, independently of the injury which is annually done to the crops, by choking them in their growth, and exhausting the soil of that nutriment, on which the strength and flavor of the vegetables depend.

We have for many years adopted the practice of going frequently over the whole of the kitchen-garden, whether the weeds abound or not, and giving it, what may be termed, a general hoeing and raking. This method not only destroys the weeds in embryo, but it encourages the growing crops, and gives the whole a clean and cheerful appearance. For this purpose, make choice of a few dry days, the time will be well occupied, and save much trouble at a future period.

All pieces of vacant ground should now be rough dug, the action of the sun upon it will improve it much, and it will present a far neater appearance, than if left in the state when the crop was removed.

Every part of the culinary garden should now be kept in a neat and well-regulated condition, and a constant attention should be paid to the progress of all seeds committed to the ground. Those that vegetate freely should be forwarded by hoeing, thinning, and watering, and in those cases where the seed has failed, it should be immediately resown; no time should be lost when such circumstances occur; some crops, such as beets, onions, parsneps, and some others, may be restored by transplanting them from those places, where they may have come up too thick. The depredation of insects should be guarded against as much as possible, until the crops are rather advanced, for after they have formed their rough or perfect leaves, few insects attack them, at least not so as to endanger the crop.

Covering the surface of the ground, between the rows of crops, with litter, moss, tiles, or slates, has a beneficial effect at a time of severe drought, as it prevents the too rapid progress of evaporation. Frequent hoeing to a considerable depth has, to a certain extent, the same effect, and either method will lessen the labour and expense of watering. When recourse is had to watering, it should be applied as late in the afternoon as possible, or early in the morning, but never during the middle of the day, excepting where a regular system of irrigation can be effected, and even then, the water should not be allowed to come in contact, either with the foliage or the stems of the plants. When the ground can be kept in a moist state during the warm months of summer, the most luxuriant crops may be expected.

JUNE.

PLANTING BEANS.

Beans, for the last principal crop of the season, may be planted about the beginning of the month. The sorts most proper for the early crops are also the fittest for the late ones. Plant the mazagan-bean for this crop, in an exposed situation; if planted under the shade of trees, the plants will be destroyed by a small parasitical fungus *(Uredo Faba)*, which has a rushy appearance, and is very destructive to the late crops of beans in shaded situations.

The beans which are now in blossom should be examined and topped, for reasons given in the preceding months.

Earth up, and otherwise stir the surface of the advancing crops, as necessity may require.

SOWING PEAS.

Peas for autumn crops should be sown both at the beginning and also at the end of the month. If the weather and the ground be dry, it will greatly encourage vegetation, if they be soaked for a few hours in water before they are sown, and it will tend much to their advantage, if when the drills are drawn, a quantity of water be poured into them, so as completely to saturate the ground. The sorts for the sowing made at the beginning of the month should be the dwarf-marrow, Hotspur's dwarf-sugar, Leadman's dwarf, and Spanish dwarf; but the best of all peas for this sowing is Knight's marrow-pea, which ought to be sown every eight or ten days, from the beginning to the end of June. The practice of well watering the drills is absolutely necessary to the future success of this pea in particular. The seeds should be sown in a single row and not thick. If the ground be not naturally deep, it must be made so, by drawing up the mould, so as to form a ridge, on the top of which the drill should be made for the seed, which after being properly watered is ready for sowing. If dry weather at any time set in, this pea will require an abundant supply of water once or twice a week. In this way the plants continue green and vigorous, resisting mildew, and yielding fruit till killed by the frost. For the last sowing made this month, prefer the Charlton and Knight's marrow-pea.

PRICK OUT CAULIFLOWER.

The cauliflower-plants sown in May for the autumnal crop, should be pricked out when sufficiently strong, into a nursery-bed of rich earth. Prepare a bed for them in an open situation, set the plants about three inches apart, then give them a little water to settle the mould about their roots. Shade them from the sun occasionally in the middle of the day, till they have taken good root. The plants are to remain in this bed for four or five weeks to get strength, and then, in July, to be planted out where they are to remain. They will produce their heads in October and November. It will be necessary to prick out a considerable number of them, as from this crop the autumn and winter cauliflowers are to be expected.

Look over the plantations of early cauliflowers, which are now coming to perfection, break down some of the large leaves over the young heads as they appear; this will blanch them of a fine delicate white colour, and prevent them from getting too open, or too advanced towards seeding, and thereby rendered unfit for the table.

Those plants which are coming into flower, and advancing in growth, should, in dry weather, have copious supplies of water at their roots, two or three times a week; this will cause them to produce large and handsome flower-heads.

TO SAVE CAULIFLOWER-SEED.

This is the proper season for the selection of those cauliflowers from which the seed is to be saved. The largest, whitest, and closest heads, should be chosen for this purpose. They should not be transplanted, but allowed to stand in the place where they were originally planted. In July, or early in August, they will shoot up into seed-stalks, and in September the seed will be ripened.

Pay particular attention to allow no plants of the brassica tribe to come to flower near where the seed-cauliflowers are planted, as all the different varieties of ***cabbages, broccolis, borecoles, savoys, cauliflowers,*** &c. have all originated from one single species, namely, the common white cabbage ***(Brassica oleracia.)*** This should also be particularly attended to in saving the seeds of every other sort or kind, as they are so extremely liable to run, or sport into varieties and monstrosities. However extraordinary it may appear, that all the varieties of those useful culinary plants should have one common origin in a plant indigenous to many of our sea-shores, yet, according to the elaborate enumeration of the brassica family, made by Professor Decandolle, we are informed, that there are even many more varieties known on the continent, of which in this country we are comparatively ignorant.

PLANTING, EARTHING UP, AND SOWING CABBAGES.

It will be now proper to sow cabbage again for a successional crop, and as the crops advance, they should be hoed and earthed up, as they may occasionally require. A few for coleworts may be sown about the middle or the end of the month, for the purpose of being planted out about the end of July, or the beginning of August. For which, see *August.*

In dry seasons, towards the end of June, the cabbage crops often become stinted, and covered with aphides to that extent, that even if they escape being entirely eaten up, they present a loathsome appearance. To obviate this, in a great measure, a plentiful supply of water should be given them at their roots, and although a superfluity of water is supposed to be injurious to the flavor of most vegetables, it does not hold good in regard to cabbages, which are not in the least affected by it.

PLANTING BROCCOLI.

Plant full crops of broccoli. Choose an open situation, and let the ground, if not already in good heart, be well dunged, and dug. Take advantage of showery weather for this operation, but if the weather be dry, let the plants have several good waterings at the root. In planting this vegetable, and all others of the brassica tribe, prepare a puddle by pouring some water into a hole dug expressly for the purpose, and stir the mould about, so as to form a puddle of rather a thick consistency; then draw the roots of the plants through it two or three times, until a sufficient quantity adhere to the roots. If the ground be very dry, after the line be set, and a drill drawn about three or four inches deep, make a mark along the drill, where each plant is to be put; then pour some water on each spot, stirring up the mould at the same time, which will form a puddle, into which set the plants. By this means, they will resist the effects of drought longer than by any other method.

Sow more broccoli-seeds about the beginning of the month, for late planting, the flowers of which, if they survive the winter, will be fit to gather in February and March.

Prick out more broccoli plants into nursing-beds, from the seeds sown in April and May; if dry weather, give them occasional waterings.

LEEKS.

Leeks may be now transplanted, for which purpose, a number of strong plants should be drawn from the seed-bed. The long fibres of their roots should be trimmed, as well as the straggling tops of their leaves. An open spot of ground should be chosen, in which the plants should be pricked out in rows about eight or nine inches asunder, and about six inches from each other in the row, observing to insert the greater part of the shank or neck of the plant into the ground.

In planting, do not press the mould tight about their stems. Make the holes large, put in the plants, and let only a little mould fall into the holes, merely to cover their fibres.

BORECOLE.

The different sorts of greens under this general name should be planted out, accordingly as the ground becomes vacant. Plant them between crops of peas, beans, or other such crops, which will be soon off the ground. Give a moderate dressing of dung, which will encourage them to grow to a larger size. Plant a considerable number of them, they will become very useful in winter, and afford fine sprouts the following spring, when vegetables are scarce.

BRUSSELS SPROUTS.

Plant again crops of brussels-sprouts, give water after planting, and treat them in other respects as recommended for broccoli.

SAVOYS.

Plant savoys for successional crops; the directions given for broccoli are applicable to the savoy. Or, if ground be scarce, they may be planted between rows of early beans, peas, or such crops, as are to be soon removed off the ground.

RED BEET.

The crops of red beet will now be rapidly advancing. Let them be kept clear of weeds. Stir the surface often between them, both to destroy the weeds, and to encourage the growth of the plants. Care must be taken not to injure the roots with the hoe, for if they be cut, they will be useless.

PRICKING OUT CELERY.

About the beginning of the month, prick out a number of the April sowing. These will be fit to transplant into the trenches, for a full crop, by the end of July. If the weather be warm and dry, water and shade them for a few days, until they have struck root.

PLANTING OUT CELERY.

The plants pricked out in May will be fit to transplant into the trenches about the middle of the month. A few only should be planted at this time, as they are apt to run to seed.

NEW ZEALAND SPINACH.

Spinach is a difficult vegetable to keep a regular supply of throughout the summer months, as it scarcely comes above the ground before it begins to run to seed. An excellent substitute has been found for it in the New Zealand spinach, *Tetragona expansa.* This should be sown in March in pots, and placed in a hot-house or hot-bed frame, until it vegetates. The seedling plants should be planted off, one plant in each pot, of the size commonly called sixties, and kept under the shelter of a frame until the beginning of this month, when it may be planted out without much chance of its being killed by the frost. At this time prepare a bed for the plants, of leaves and dung slightly warm; when a little heat is rising, cover it with mould to the thickness of six or eight inches, set the plants about three feet apart, protect them with hand-glasses, or hoops and mats, for a few nights, until they are properly established. In dry weather, give plenty of water to the plants; they will amply repay the trouble, for a few plants well managed will supply an ordinary-sized family with an excellent substitute for spinach, until destroyed by the frost, by which time the common spinach will be again in perfection. In gathering the crop, care must be taken not to tread upon the young shoots, which are very tender, and liable to be injured. The largest leaves should be carefully pinched off, after the manner of spinach.

SCORZONERA, SALSAFY, AND HAMBURG PARSLEY.

The crops of scorzonera, salsafy, skirrets, and large-rooted parsley must now be thinned and cleared from weeds, either by the hand or the small hoe. The plants to be thinned out to the distance of about six inches.

CAPSICUMS AND LOVE-APPLES.

If these were not planted out last month, let it now be done; the capsicums on a warm sheltered border, or at the bottom of a wall, and the love-apples on any empty wall or pales.

CARROTS.

Now finally thin out the crops of carrots, and clear them of weeds; let the hoe be drawn through them occasionally, it will promote their growth.

PARSNEP.

The above directions for carrots are equally applicable to parsneps, only allow them double the distance.

EARTHING UP POTATOES.

Now finally earth up the crops of potatoes, and clear them from weeds. They will require no farther attention till fit for taking up for use.

LETTUCES.

An open spot of ground should now be chosen for the transplantation of those lettuce-plants, the seed of which was sown in April and May: showery weather should be chosen for this purpose, for if they be planted when the season is dry, a considerable risk is run of them ever taking root. It may, however, occur at this season of the year, that the advantage of showery weather does not present itself, in which case, we recommend the adoption of the following method.

Let some small shallow drills be drawn with a small hoe, about a foot asunder, in each of which plant a row of lettuces about a foot from each other, giving them, at the same time, a liberal supply of water.

If the weather be very dry, and the sun scorching, cover the plants for a few hours every day, from about twelve to three, by inverting flower-pots over them. This will shade them, nor will it be in the least injurious to them; or they may be shaded by placing hoops over them, and in very warm days, cover them with mats for a few hours.

The advantage of planting lettuces in drills arises from the convenience which it presents of supplying them with water more easily, than if they were planted on a level piece of ground, independently of the greater length of time that the moisture is retained about the roots of the plants.

Some lettuce-seed may now be sown, for the raising of plants to supply the table in July, August, and September. For this sowing we recommend the cos, Silesia, the brown Dutch, the imperial lettuce, and the great white Dutch cabbage-lettuce. Some of these seeds should be sown twice during this month; a moderate crop in the first or second week, and a similar sowing towards the latter end of the month.

We have found from experience, that lettuce sown where they are to remain, are not apt to run to seed so soon, as when transplanted. Therefore, if there be ground to spare, sow broad-cast, but thinly, a considerable piece of border, partially shaded, or in an open quarter of the garden, and run the hoe occasionally through them, to destroy the weeds and refresh the plants.

If a quantity of the true brown cos have been sown in autumn in an open quarter of the garden, and occasionally hoed, they will be found to last longer for use than any that have been transplanted, and sown at the same time, and decidedly longer than seeds sown early in spring, whether transplanted or not.

When any sorts of lettuce are to be saved for seed, set apart for that purpose, some of the finest formed plants, and let them stand two feet apart each way. As they send up their flower-stalks, let them be supported with sticks, to prevent them from breaking. Where different sorts are to be saved, remove each sort to as great a distance as possible from each other. As lettuce-seeds retain their vegetative properties for years, it may be as well to save only two or three sorts each year, as by this means, they will be less likely to get impregnated with other sorts.

The following is the Hanoverian method of saving lettuce-seed. Do not wait till the spike of flowers has ripened all the seeds, but cut it over on the first appearance of maturity, and lay it on the ground, when all the florets will ripen their seeds nearly about the same time.

RADISHES.

Continue to sow radishes of sorts for successional crops.

SMALL SALADING.

Sow cresses, mustard, rape, &c. once a week, if a constant supply be wanted.

WATER-CRESS.

This excellent salad may be successfully cultivated, particularly where there is a clear running stream of water. The plants can be procured in almost all streams, and should be carefully removed, making choice of the youngest. They are then to be disposed in rows parallel with the course of the stream. In shallow water, the distance need not be more than eighteen inches between the rows, but in deep water the distance must be greater. They will not grow so freely in a muddy bottom, as amongst sand or gravel, neither will their taste be so good. It is absolutely necessary to have a constant current, as when the water is in a stagnant state, they cease to prosper. They are cultivated in water-beds, but they neither prosper so well, nor is their flavor so good, as in natural streams. No place is better calculated for them than a natural stream, and no other culture necessary than keeping a stock of stout healthy plants, which can be done with little trouble, by filling up the vacancies where any may have died, and keeping them clear of rambling aquatic plants, which generally grow very luxuriantly.

PLANTING OUT PICKLING CUCUMBERS.

About the end of this month, the plants of which the seed was sown in the preceding one will now be ready to plant out. For this purpose, select a warm situation and a light rich earth. They may be planted in patches, three in each, triangularly, each plant a foot distant from the other. A yard and a half square may be allowed to each patch, taking the centre of each as the line of measurement. They may also be planted in one line, about two feet asunder; and if more than one line be required, let them be drawn five or six feet asunder. The plants must be frequently supplied with water, and for a few days carefully shaded from the sun. This may be effected by turning down large garden-pots upon them, which may be gradually removed, that is, in the first instance in the mornings and evenings, and then entirely.

If the situation or season be cold, and there be any spare lights or frames, it will be advantageous to place them over a part of the pickling cucumbers, so as to insure a fine crop, and to come in earlier than those on the open ground. It is always of importance to choose the warmest spot for the cucumber crops, as they will do little or no good if planted in an exposed or cold situation. In dry weather, cucumbers require frequent and plentiful waterings, and in this respect they must be particularly attended to, as they advance in growth.

SOWING CARDOONS.

If cardoons were not sown last month, let that now be done; for directions, see *May.*

ENDIVE.

The endive sown in May will now be fit to transplant permanently; an open spot of ground should be chosen for these plants, let it be well dug and manured. Put the plants in by line about one foot asunder, and let them have some water as soon as they are planted. Endive sown in May, or before, is apt to run to seed before the plants arrive at any state of maturity; therefore it would not be prudent to plant any great number at this time.

Endive-seed must now be sown for a principal crop, the preferable sort for which is the green curled, not only as being the best for general use, but also as being able to stand the winter better than any other kind.

Some broad-leaved Batavian endive may be also sown. This sort grows very large, and if tied up will cabbage well, and be very white. In hardiness, however, it by no means equals the green curled, for towards the latter end of autumn, or the beginning of winter, should the season be wet or frosty, it soon rots, and the expectations of the grower are wholly frustrated.

Endive-seed should be sown in an open spot, not too thick, and it should be raked in equally, and as regularly as the nature of the ground will admit. It would be advisable to sow this seed at two different periods during this month, one at the commencement, and the other towards the latter end. In adhering to this plan, a regular supply of good plants may be obtained.

In regard, however, to the principal autumn and winter crop, the seed should be sown, generally speaking, about the third or fourth week of the month, for that which is sown earlier is very apt to run to seed at the beginning of autumn, and before the plants have attained their full maturity.

TURNIPS.

A principal crop of turnips should now be sown, about the middle of this month, for the autumn and winter use, and considerable benefit will be derived in sowing the seed in showery or rainy weather, or if the prospect presents itself of such weather coming on. Particular care must be taken in sowing the seed equally, and immediately afterwards tread it down and rake it evenly.

The crop which was sown in May should now be hoed, and the plants thinned out in a regular manner. This work should be done when the rough leaves are about an inch broad, and if it be performed at this time, it will greatly accelerate the growth of the plants, which should be thinned to about nine or ten inches apart.

TURNIP-FLY.

This injurious insect has long baffled the ingenuity of both agriculturists and gardeners to devise the means of its destruction, and it still continues annually to make its ravages on the turnip-crops sown in the summer months. Mr. Patrick Neill, an enthusiastic horticulturist and man of science, says, "One of the easiest remedies is to sow thick, and thereby ensure a sufficiency of plants, both for the fly and crop." Mr. Mean proposes a simple remedy, which is to steep the seed in sulphur water, in the proportion of one ounce of sulphur to a pint of water; this quantity will be sufficient for three pounds of seed. Mr. Gorrie, in one of his valuable communications in the Caledonian Horticultural Memoirs, however, found that neither steeping in sulphur-water, nor sowing soot, ashes, nor sea-sand in the drills, had any good effect; he at last tried with success, dusting the plants, while in their seed-leaf with quick-lime, and he adds, that should rain fall before the plants are out of danger from the fly, the operation must be repeated. He calculates that a bushel of lime is sufficient for an acre of drilled turnips. Mixing old and new seed has been recommended, and successfully practised. The old and new seeds to be of equal quantity, and then dividing the mixture into two parts, one of which is steeped twenty-four hours in water; by this means, four different periods of vegetation are procured, and consequently four chances present themselves of escaping the fly.

ASPARAGUS.

In the cutting of the shoots of asparagus, attend to the directions given in the preceding month, but it is advisable to terminate the general cutting for the year about the twentieth or twenty-fourth of this month, otherwise the roots will be considerably weakened, for as long as the produce is cut, the roots continue to send up new shoots, although decreasing every time in size. Thus, if the cutting be continued late in the season, the roots will be thereby considerably exhausted, and the produce of the succeeding year proportionably diminished.

The season of this useful vegetable may be prolonged, if attention be paid to the annual making of new beds, and this practice possesses this great advantage, that it admits of the older beds being destroyed, the cutting of which may be continued, as long as any shoots of consequence make their appearance.

Previously to the asparagus running up to seed, the beds should be perfectly cleared from weeds, for this operation cannot be so effectually accomplished, after the stalks have attained a considerable height.

The young plants which were sown in the spring should now be carefully weeded with the hand, but not with the hoe, as the latter would endanger the growth of the young buds.

GENERAL CROPS OF ONIONS.

At the beginning of this month, the crops of onions should be thoroughly cleared, and in those places where the bulbs stand too close, they should be regularly thinned, either by the hand or the small hoe; but for extensive crops, the latter method is by far the most expeditious. In either method, however, particular care must be taken to have the operation performed in proper time, for it will be found, that stirring and loosening the earth proves highly beneficial to the growth of the plants. Regularity should be particularly observed in the thinning of this species of crop, leaving the most promising plants at a distance of at least three inches asunder, and those which are intended for the full crop of larger bulbs, at a distance of four or five inches. All weeds should at this time be effectually eradicated.

GATHERING THE CROPS OF WINTER ONIONS.

About the end of this month, or the beginning of July, the crops of onions will be so far advanced towards maturity, as to be gathered for winter use, and experience proves that they will keep better and longer than those of any other sowing. They should be spread out thinly on the ground for a few days to dry and harden, and then laid up in the granary or store-room, exposed to the influence of the sun and air, until sufficiently dry.

WHITE AND GREEN BEET.

The cultivation of the white and green beet is generally confined to the use of their leaves, which are used in soups, and on some occasions are boiled in the manner of spinach. When the leaves of the large white beet have attained their full size, they are stripped to the mid-rib, which, being in itself thick and fleshy, is peeled and stewed, and then eaten like asparagus.

As the leaves of these plants grow to a considerable size, they should be allowed ample space to grow; in thinning them, therefore, a distance of six or eight inches ought to be observed between every plant, and in other respects, the same directions will apply as those, which have been already given for the cultivation of the red beet.

FRENCH OR KIDNEY-BEANS.

A successional crop of kidney-beans should be planted at this time, for which purpose any of the dwarf kinds may be chosen. In order, however, to have a regular supply, a crop should be planted in the first week, another about the twentieth, and a third towards the latter part of the month.

The climbing or running kinds of kidney-beans may also be planted at this time, the proper sorts for which are the scarlet blossom, the large white kind, and also the white Dutch. If for a full crop, they should be planted in the first or second week of the month, although they will succeed if sown at a later period; the crops which were planted early in the month will begin to bear in July, but in August they will be in full bearing. The scarlet-runners will continue in produce until October.

In the planting of the different kinds of kidney-beans, especial care must be taken to allow each sort a sufficiency of room, in order that they may not be stinted in their growth. For this purpose, drills should be opened for the running kinds, from three and a half to four feet apart, and for the dwarf kinds, the drills should be drawn from two to two feet and a half distant, and an inch and a half in depth. If the weather be dry, the drills should be well watered before the beans are planted, and the earth should then be regularly drawn over them.

All the advancing crops should be cleared from weeds, and a little mould drawn to their stems: this will strengthen the plants and accelerate their growth.

HERBS.

Propagate sage by cuttings, borage and marigold by seed, also savory, thyme, and sweet marjoram by seed, and hyssop by cuttings. Prick out the plants of burnet, borage, sorrel, clary, marigold, angelica, &c., which have been raised from seeds last year.

Gather mint, balm, and other herbs, towards the end of this month for drying, the most proper time for which is when the plants are nearly at their full growth and beginning to flower. They must be cut on a dry day, and those for keeping immediately spread, or hung up to dry in an airy room, out of the reach of the sun, and where they may dry gradually, as the heat of the sun would affect them too much, and render them of little use. All plants, whether for distilling or drying, should be gathered when almost arrived at their full growth and are beginning to flower; therefore, if they have not arrived at that state of maturity, the cutting should be deferred for a few days or weeks longer.

WATERING CROPS OF CULINARY VEGETABLES.

Gardeners are at variance in their opinions on the merits of watering crops of culinary vegetables, some advocating the practice, and others condemning it. If a system of watering be once commenced, it should be continued until rendered unnecessary by rain, for if it be once begun, and suddenly desisted in before rain falls, the crops will be rather injured than improved by it. Watering sparingly is of little use, and therefore, if circumstances do not admit of its being prosecuted with an unsparing hand, it is better to desist from watering altogether. During the hot months of our English summers, a liberal supply of water would, no doubt, be beneficial to most crops on the generality of soils, and when circumstances will admit of partial irrigation, the crops may be expected to derive considerable benefit from it. The gardeners in the vicinity of London, who are without doubt the best managers of their ground, annually incur great expense in this process, and long experience proves to them the important advantages resulting from it. Irrigation has, from the earliest ages, been considered an important part of field and garden culture, and it may not be going too far to suppose that the idea originated from the annual overflowings of the Nile. Some crops withstand long droughts without sustaining much injury, when once they are properly established in the ground, but by far the greater part in ordinary cultivation suffer materially from a dry season. Mulching, shading, and stirring the soil, are remedies to a certain extent, and are performed with much less labor and expense than irrigation. The crops of most vegetables, where the drill system is practised, can be readily mulched, that is, the ground round their roots is covered with substances, which prevent too powerful an evaporation, and at the same time have a tendency to enrich the soil, consequently to afford a considerable degree of nourishment to the crop. Of all substances for this purpose, dung is the best, which if spread in the spaces between the drills, will have the most beneficial effect. The sweepings of lawns, waste straw, rotten tan, sawdust, &c. will afford shade to the roots, and prevent too great evaporation in the soil. Slates, tiles, and boards have been recommended, and found to be attended with good effect. Smaller crops, such as salads and young seedlings, may be readily shaded with mats, supported on hoops, for a few hours daily, and the beneficial results will, in most cases, justify the plan. Hoeing or stirring the surface frequently, during protracted drought, has been proved to have the effect of rendering the soil less impervious to the heat of the sun, thereby keeping the soil beneath both cooler and moister, and the deeper that this operation is performed, the better will the crops be found to stand. This latter mode is also applicable to crops sown broad-cast, but in a less degree, as, from the position of the plants, the hoe cannot be applied so as to loosen the soil to such an extent as in the drill system.

WORK TO BE DONE IN THE CULINARY GARDEN.

Attend to the directions given last month, and now thin all crops as they advance. Keep the hoe in full employment in every part of the garden. Support with stakes the crops that may require it, and water, as far as is practicable, every thing that stands in need of it. Destroy insects, eradicate grubs, which, at this season, are by far more mischievous in the garden than any other object. This must be done by picking them up where they appear. Destroy slugs by picking, or by watering with lime water, or strewing hot lime round the plants: the former is the most effectual method. Let every part of the garden now assume a neat and clean appearance. Where watering is necessary, let it be done from four to six in the morning, and from six to nine in the evening. For this labor the men should be allowed extra wages, or if it be preferred, let them rest in the middle of the day. In large gardens, water ought to be applied by means of a small fire-engine, worked by three or four men; this will water the quarters of the garden without treading the ground. One man at the end of the pipe will disperse the water regularly, without being obliged to tread much upon the ground. At the same time, the wall-trees can be well washed, which will be of much importance to them, provided that water has not been brought into the garden, as recommended in the former part of this work.

There is no garden so situated, but water might be brought to it by some means or other, and those that are indifferently supplied with this necessary article, will always be subject to many disadvantages, over which the cultivator can have little control.

JULY.

SOWING BEANS.

A few mazagan beans may be sown about the beginning of this month. Sow them on a sheltered south border; if the autumn be mild, they may probably produce a few dishes of young beans, but if not, the trouble is not great.

SOWING PEAS.

In the first week of the month a few of Knight's marrow-pea may be sown, or the Charlton or early frame. Give them occasional waterings in dry weather. They may afford a few peas in autumn, if the weather be mild. Little dependance, however, should be placed on this sowing, but the crops of Knight's marrow, as directed for last month, will, if properly attended to, come in both abundantly, and, in all probability, will last until the frost destroys them.

PLANTING LATE CAULIFLOWERS.

About the latter end of the month, the cauliflowers which were sown in May, and intended for a late crop, and which were pricked out the latter end of June, will now be of a proper age to plant out permanently; they may be planted in an exposed situation, at not more than eighteen or twenty inches square, as the flowers of this crop will not attain to so large a size as those of the former crops of the season; they must, however, be planted in a rich soil, in order that they may be obtained in the greatest possible perfection, and in the greatest abundance. If they be properly stored, according to the directions given in October, some excellent cauliflowers may be had at Christmas, and even at a later period. They must be regularly watered if the weather be dry, and in all other respects attend to them, according to the directions given for the other crops of cauliflowers.

PLANTING CABBAGES.

Prepare ground to plant out full crops of cabbages for autumn and winter use. Let the ground be well dug, and moderately dunged. Plant the cabbages in lines, two feet apart, and eighteen inches between the plants in the line; if ground be scarce, plant as before directed between rows of peas, beans, or such crops as are soon to be cleared off the ground. Let a good supply be planted at this time; if the weather be dry, give plenty of water, until they be established in the ground.

TAKING UP THE CROPS OF WINTER ONIONS.

As the crops of onions which were sown last autumn, and were transplanted, as has been already noticed, as well as those which were not transplanted, begin to ripen, particular attention should be paid to them, and their tops bent down, which will hasten their ripening. Those which are already ripe should be pulled, and carried to a dry place for a few days to dry and harden, before they are removed to the store-house. If they have succeeded well in their growth, they will be in general large, and should be tied up in bunches or ropes, as they are generally called, and hung up for use.

TRANSPLANT CELERY.

For this purpose, prepare trenches in order to plant out a good crop for autumn and winter use. These trenches are often made only one foot wide, and a single row of plants put in each. This is a very good method for early crops, such as were planted last month, but it is evidently a great waste of ground. The method we would recommend has been practised by us for many years, and is generally adopted by the market-gardeners in the vicinity of Edinburgh. Make the trenches from four to six feet wide, and one foot deep or more, throwing the mould taken out of the trench equally on both sides of the trench, taking care to break the mould as finely as possible, which will render it fit for the earthing up of the crop as it advances.

Lay a good quantity of rotten dung in the bottom of the trench, which dig in to a reasonable depth, or if the ground be shallow, and inclined to a gravelly bottom, the dung may be regularly spread on the bottom of the trench, and an inch or two of mould taken from the sides to cover it. In beds thus prepared, set the celery plants, which have been transplanted into a nursing-bed the preceding month, in rows across, about one foot apart, and the plants eight inches distant in line. When planted, give the whole a good watering. If the weather be dry, the beds may be watered as the process of planting proceeds, and after all the plants are set, give them a good watering to settle the mould about their roots. The dung should be from six to nine inches thick, and as rotten as can be procured. The great advantage of this method, independently of a great saving of ground, is, that if any quarter of the garden be fixed upon and cropped with celery, it will be, in two years, completely trenched, and manured over to any depth that the trenches may be made, by making them the second year in the space occupied by the mould between the trenches of the preceding season.

The facility of earthing up the crop is greater by this method than by the other. When the plants require to be earthed up, take two boards of the same length as the width of the trench, and six or eight inches broad; place the boards between two rows of the plants, which can be done by a boy, then place them pretty close to the plants, and the space between the boards should then be filled up with mould very finely pulverized, by two men, one on each side of the trench. When a sufficient quantity of mould is put in, remove the boards, and proceed to another space, and so on till the whole be completed. We have found from experience that this is the most expeditious method, and the same piece of ground will contain more than six times the quantity of celery that is generally obtained from the single drill or trench system.

In the Gardeners' Magazine for March, 1827, the following method of growing celery is recommended by Mr. George

Gledstone, at Netherwillon, Northumberland, and he declares it to be the result of an experience of thirty years.

Select a piece of ground in an open situation, if it be level, the better. If the celery be grown in single trenches, they ought to be five feet apart; if six feet trenches and planted across, leave five feet between. But to proceed with the single trench: this must be thrown out three feet wide, and three and a half deep, place a stake in the centre at each end of the trench, make the bottom level, beat in clay regularly to the thickness of six inches; then lay two courses of stones or bricks lengthways of the trench, and parallel to each other, leaving a space of one foot six inches between. Each course ought to be eight or nine inches thick, and laid in lime-mortar; the clay should be well pointed to the stones, to make all water tight, this being the only utility the clay and stones are intended for.

The trenches are now to be filled to the height of the stones, with a composition of strong clay loam, common earth, and rotten dung, then pour in as much water as the trench will hold, making the whole a sort of puddle. It will be advisable to lay a slate or flat stone down the centre of each trench, to prevent the clay from being injured by any unskilful hand that may be employed in taking up the celery, or renewing the composition in the trenches. Level down the soil to and over the stones, filling the trench in the centre with the above composition to two feet from the bottom; this places the plants fifteen inches above the puddle, and forms a trench one foot below the surface, which is an advantage in earthing up the plants.

Where early celery is required, it is advisable to sow a little seed in the first or second week in February. Where there is the convenience of a vinery, sow it either in boxes or pots, giving the plants plenty of air as soon as they vegetate; plants grown in heat are more apt to run to seed than when sown in the open ground. As soon as the plants are fit to transplant, provide a slight hot-bed, cover the inside of the frame with flat stones or slates, laying their edges close to each other, then cover the stones or slates with strong fresh loam and rotten dung to the depth of four inches. As soon as the soil is warm, fill the frame with the young plants three inches apart each way; observe to take off all the tap-roots, give a little water, and put on the lights; give plenty of air, and when the plants are well rooted, take off the lights every mild day, and leave plenty of air at nights. When the plants have become tolerably strong and hardy, remove the lights altogether, and cover only at nights with a mat, watering freely in dry weather. When the plants have reached the height of six or eight inches, they ought then to be removed into the trenches: cut the plants out in squares, placing them carefully about eight inches apart in the trench. When the work is performed by a careful and active hand, they will scarcely feel their removal; their roots will reach the puddle in the space of fifteen or twenty days, when their growth will be accelerated in a rapid degree. There will be a visible change in their external appearance, from an ordinary hue to a deep dark green, nearly bordering upon black. When the plants have grown to the height of eighteen or twenty inches, they will then require a little earthing up, but be sure to give a good watering first, and place a little water-run sand round each plant, which keeps all clean and free from worm-eating and canker. Where a retentive bottom is found, this preparation is not necessary; but to prevent worm-eating or canker, when the trenches are prepared in the ordinary way, draw a drill three inches deep, in the centre of each crop, fill the drill with sand and plant as usual.

If a good stock of celery plants be planted in a composition as directed above (but not in a hot-bed), upon a piece of ground beaten hard to prevent the roots striking deep, you may with these plants fill the early celery trenches the second time in the same year, and one quarter of the dung used in the common way will do to renew the trenches after the first year. By allowing the plants four inches distance from each other in the composition, they will grow strong, and remove when twelve or fifteen inches high, and be soon ready to earth up.

BORECOLE.

The different sorts of greens under this general name should be planted, as directed last month. Let every piece of vacant ground, which is not intended for any other crop, or for any operation of improvement, such as trenching, winter-fallowing, &c., be now filled with the different sorts of greens, savoys, Brussels-sprouts, and broccolis. Many of the latter sorts will probably be destroyed by frost, but should they all survive, they will be useful in spring, when vegetables are generally scarce. If circumstances will admit of it, make choice of different situations for them, in order that the greater probability may exist of a considerable number of them surviving the winter. Situations which are the least exposed to the full action of the morning sun in spring are undoubtedly the best, and next to that, a high dry exposed situation, avoiding, if possible, those places which are under the shade of trees, as the rain dropping from them will keep the crops always damp, and the obstruction which they give to the free circulation of air will generate a dampness, extremely injurious to vegetables.

BRUSSELS-SPROUTS.

Plant successional crops of this useful vegetable. Let the ground be well manured, and allow the plants to stand two feet apart. Hoe and earth up the crop planted last month, which will encourage their growth.

SAVOYS.

Plant full crops of savoys at the beginning, and for later crops, at the end of the month. In all other respects observe the directions given for borecoles.

SOWING AND PLANTING ENDIVE.

At the beginning, the middle, and end of the month, endive for a full crop may be sown. The green, and white curled are very good sorts for general use, but any of the other sorts may be sown according to fancy. They are divided into two general divisions, the first are the curled endives with narrow leaves, and are by the French called *Chicorées;* the other division comprehends the broad-leaved sorts, commonly called

Batavian endive, the *Scaroles* of the French. The Batavian sorts are of large size when well grown. That sort called the small Batavian is decidedly the best of the Batavians, as it blanches with little trouble, and is mild without being bitter.

About the middle of the month, the endive which was sown according to the directions given in June, will be fit to plant out. An open spot of light rich earth must be chosen, which must be dug a full spit deep. Then some shallow trenches must be formed with the spade, or large drills made with the hoe, about twelve or fifteen inches asunder. The plants are to be set in these trenches or drills, about nine or ten inches apart, and a moderate watering immediately given to them, which must be occasionally repeated until the plants have taken fresh root.

The tap-root must be a little shortened before planting, as well as the points of the leaves. The reason of planting in deep drills, instead of on the plain surface, as is often done, is, that the leaves may be blanched with little trouble, and the water applied to their roots not be wasted. To have endive large, it is absolutely necessary to plant it in ground of which one half is nearly composed of rotten manure.

BLANCHING ENDIVE.

The blanching of endive is frequently performed in the same manner as early cabbages, by tying them up with strands of matting. If, however, the plants be carefully earthed up, the blanching of the curled kinds will be thereby more easily accomplished than by tying up, as they do not come together so well in the hearts. On the other hand, the Batavian kinds thrive better by being tied up, arising from the more upright manner of their growth. If, however, the plants be set in drills, the process of blanching may be facilitated by adopting either of the methods according to the option of the grower.

Another method of blanching endive presents itself, which is performed by setting up common roofing tiles over the plants in the form of a triangle, and if tiles cannot be procured, large slates will have the same effect; but a method attended with less trouble is to place some thin boards, about a dozen feet in length, and nine or ten inches in breadth over the plants, and the mould drawn up to their sides so as to keep them in a steady position. In several places, however, pots are to be procured made for the express purpose of blanching endive, and are similar to those used for sea-kale, only rather smaller in size. The common garden flower-pot will blanch endive well, and the same directions will apply as those which have been already given for sea-kale.

EARTHING UP CARDOONS.

It is now the proper season to give a final thinning to the cardoons which were sown in May, and they should be left at a distance of eight or nine inches apart in the row. The ground must be hoed amongst them, for the purpose of stirring the surface, and also for the eradication of any weeds that may be in the ground. A little of the earth which was thrown out in the formation of the trenches, may be put to their stems, but too much earth must not be put at one time, and the greatest care must be taken not to bury their heart-leaves. The earthing up must always be done when the ground is dry, and it must be repeated every two or three weeks during the summer, for if the plants be allowed to grow to any length between the earthings, a considerable difficulty will be experienced in performing the operation properly, on account of the rapid growth of the plants.

There is a species of cardoon cultivated in France under the name of cardoon of *Tours*, which is reckoned better than the sort cultivated in England. It is of so formidable a nature, in consequence of the spines, with which it is thickly covered, that great caution is necessary in working amongst them to avoid personal injury. A strong leather dress and gloves are therefore worn in all operations with this species. It has not been yet introduced into the British gardens, as far as we can learn.

Cardoons sown in June for a full crop, may, about the end of the month, be finally thinned out; taking care to earth them up as they advance in growth.

SOWING CARDOONS.

Cardoons for a late crop may yet be sown; and it is probable they will succeed, if the winter be not severe. A spot should be chosen as dry as possible, and the seed sown as directed in May.

CARROTS.

About the beginning of this month sow some carrot-seed, to raise crops for use in October or November, and if slightly protected, they will continue good until the spring.

ARTICHOKES.

At this season artichokes will be coming into use, and if it be wished to have them of a large size, in order to encourage the main head, all the suckers or small heads, which grow out from the sides of the stems, should be pruned off. Particular care should be taken, immediately after having cut off the head of the artichoke, to break the stalk down close to the ground. This practice, although disregarded by many as unworthy their notice, is nevertheless of greater consequence than is generally imagined; for if the stalks be suffered to remain, they greatly impoverish the roots, and exhaust them to such a degree as to injure their future bearing.

SOWING ONIONS.

Towards the latter end of the month some onion-seed may be sown to stand the winter, for which purpose a spot of rich ground should be dug in a sheltered, but not a shaded situation. The ground having been divided into beds about four feet wide, proceed to sow the seed moderately thick, and rake it well; or the seeds may be sown in drills, according to the directions already given for spring crops. About Michaelmas the plants will have attained a sufficient degree of strength to enable them to sustain the severity of the winter, and in the following months of March and April, they will furnish the necessary supplies for salads and other culinary purposes.

When the plants have attained a moderate size, they should be carefully weeded, which, if neglected, the weeds will soon overtop the plants, and check them in their growth, if not wholly destroy them. (See *next month.*)

SOWING WELSH ONIONS.

This is a very hardy sort of onion, and withstands the severest frosts. Sow now a small bed of them, and they will come in use in the spring. It is a perennial plant, and need not be sown every year. A bed, in tolerably good ground, will last two or three years, or longer.

PLANTING LEEKS.

If a sufficient quantity of leeks were not transplanted last month, let it now be done. The ground should be well manured, as they will remain upon it till the following spring. Leeks are, to use the common expression, a gross feeder, therefore the ground cannot be too highly manured for them.

SOW BROCCOLI SEED.

Broccoli-seed may be sown at this time for a late spring crop, and it should be the last sowing of the season. It would also be advisable that the seed should be in the ground before the tenth, or at the latest, before the fifteenth of the month. A bed of rich mellow earth should be chosen for this seed, and if the weather be dry, a moderate watering should be given.

About the middle, or the latter end of August, or the beginning of September, the plants raised from this sowing will be sufficiently forward to prick out where they are to remain, and in April, or the beginning of May, a supply of small heads will be obtained.

PLANTING BROCCOLI.

A full crop of broccoli may now be transplanted, for which purpose a piece of the richest ground should be dug, and if it has been previously well manured, it will prove of considerable benefit to the crop.

The plants should be set out in rows, allowing at least two feet between each row, and about the same distance from one another in the row. Immediately that they are planted, give them some water, and if the weather should subsequently prove dry, the watering should be repeated once every two or three days, until the plants have taken root.

Look carefully over the whole brassica tribe in showery weather, and destroy slugs, which otherwise would soon destroy the crops. Much has been said on the destruction of slugs, but we have never found a more effectual method than that of simply picking them up with the hand. This ought to be the first thing done in the mornings, the earlier the better, and as they are gathered into a flower-pot, let them be carried away to a great distance from the garden, and buried; or, if they be thrown into a tub, and a quantity of hot water poured over them, they will soon be destroyed.

Continue to look carefully for a few mornings over the crops subject to be annoyed by the slugs, and the injury will soon be remedied. Lime is sometimes strewed round each plant, but it soon loses its alkalescent properties when laid on the damp ground, and much sooner when exposed to the dews and rain. Lime-water has been recommended, but that is attended with more trouble, and less success, than the plan of picking them up by the hand.

FRENCH OR KIDNEY-BEANS.

Kidney-beans may now be planted for a late crop, for which purpose either the running kinds or the dwarfs are the most proper. It must, however, be observed, that unless the seed be planted before the third week of this month, this crop very rarely succeeds, especially if the autumn be unfavorable.

The situation most proper for this crop, is where it may in some degree be sheltered from the severity of the frost, which sometimes happens in the mornings of September; but if the weather prove mild, this crop, if regularly and constantly gathered as it is produced, will continue to bear until October.

In the planting of beans at this season, if the weather be very hot, and the ground parched, it will be found beneficial to soak them in pond or river water for seven or eight hours; putting them into the water in the morning, and immediately on taking them out, to plant them. Considerable advantage will be derived from watering the drills before the beans be planted.

It must, however, be carefully observed, that the beans should not be soaked, excepting under the above-mentioned circumstances; at any other time, it will be found sufficient to water the drills well, and then to plant the beans immediately, covering them over lightly with earth.

WINTER-SPINACH.

Winter-spinach may be now sown, and for this season the prickly-seeded kind is the best, as being better able to endure the cold rains and frosts than the round-seeded sort. This crop, unless in a cold or exposed situation, need not be sown until the first or second week in August, (see *August*); and even in a warm exposure, it were better to defer it until the latter end of that month.

For this seed a situation should be chosen that has the advantage of the winter's sun, and after the ground has been well dug, the seed should be sown thinly, in drills, and raked in, or the seed may be sown broad-cast, and then afterwards raked in regularly.

It will be found beneficial to sow a little brown Dutch or common cabbage-lettuce with the spinach-seed for winter use.

The ground intended for spinach cannot be too highly manured, in fact, it is upon old dunghills that it will grow to its largest size.

As this spinach is intended to stand during the winter, it would be advisable to sow two crops, one on ground highly manured, and the other on a soil of lesser richness. The former will be in high luxuriance for autumn and early winter use, and the latter, being less succulent, will more effectually resist the influence of frost, and be in good condition until the spring.

TURNIPS.

This month may be considered as the most favorable season for the sowing of turnips for autumn and winter use. The plants raised from this sowing will be fit to draw in September, and will improve in growth from Michaelmas to Christmas, and should a moderate winter ensue, they will continue in perfection until the following spring.

An open situation should be chosen for this seed; the ground well dug, and the seed sown whilst the earth is still fresh; particular care must be taken not to sow it too thick.

The turnips which were sown in June should now be hoed, and this operation should be performed when the weather is dry. All weeds should be cut down, and the turnips thinned out to about seven or eight inches distant.

At a season when the turnip-fly is not apprehended, the seed may be put into the ground without any preparation; but if the seed be sown in the hot weather of summer, it is advisable to make use of some cheap preventive of the fly. It appears from a trial of Mr. Knight, at the suggestion of Sir Humphrey Davy, that lime slaked with urine, and mixed with a treble quantity of soot, if sprinkled in with the seed at the time of sowing, will protect the seeds and germes from the ravages of this pernicious insect. This antidote, however, cannot be conveniently applied, unless the seed be sown in drills. A remedy, still more simple, has been recommended by other horticulturists, which consists in merely steeping the seed in sulphur-water, in the proportion of an ounce of sulphur to a pint of water, which will be sufficient for soaking about three pounds of seed.

In the dry seasons of 1825 and 1826, when few turnips were raised in the kingdom, we derived considerable advantage by covering the ground with common hurdles, as soon as the seed was sown. By this means, the ground was partially shaded, at the same time that it was prevented being trodden upon by the people during the process of watering. It must, however, be observed, that in this case, the ground was well saturated with water before the seed was sown, a practice which, in dry weather, is of the highest importance to every crop. The hurdles were allowed to remain on the ground until the rough leaves had appeared on the turnips. As a proof of the efficacy of this practice, a piece of ground, which was sown on the same day and with the same kind of seed, but on which the hurdles were not placed, did not produce one plant within a yard of each other.

SOWING COLEWORTS.

This is the proper time to sow a full crop of coleworts, for autumn and winter use, and also for plants to stand until the spring, when the savoys and other greens have been consumed.

In order to have good colewort plants, sow some of the best Yorkshire or sugar-loaf cabbage-seed; the Battersea and Antwerp kinds may also be sown, but all the kinds of slow-hearting cabbage should be rejected. Considerable benefit is derived from sowing the above seeds, as those plants, which are not cut in their colewort state may be allowed to stand to cabbage.

If coleworts be wanted for winter use, the seed should be sown the last week in June, or at farthest in the first week of this month. This sowing will produce plants fit for use in November and December; but if plants be wanted for spring use, the third or fourth week of this month is soon enough to sow the seed.

An open spot of ground should be prepared for each sowing, and divided into beds of three or four feet in width, in which the seed should be sown moderately thick, and raked in regularly. In about a week or ten days, the plants will make their appearance, and in September will have attained sufficient strength for transplantation. The plants should be set in rows about a foot asunder, and about seven or eight inches distant from each other in the rows.

CUCUMBERS FOR PICKLING.

The cucumber plants which were sown or planted in the natural ground to produce picklers, should be now attended to.

The vines will have begun to advance, and should be laid out in regular order; but, at the beginning of the month, it will be proper to dig and loosen the ground lightly between the holes of the plants, taking care not to go too near to disturb their roots. In the course of this operation, draw some earth between and round the stems of the plants in each hole, pressing it down gently, with the view of making them spread different ways. At the same time, draw the earth up round each hole, in order to form a basin to contain the water which is given in dry weather, and as the runners of the plants advance in growth, let them be trained out in a regular manner and pegged down. This will induce them to push out roots at their joints, and thereby impart additional strength and vigor to the plants.

In dry weather, the plants must be liberally supplied with water, which, if the season be very hot, should be given every evening.

GARLICK AND ESCHALOTS.

The eschalots and garlick which are full grown should now be taken up, the proper season for which is known by the leaves, which always begin to wither when the bulbs or cloves have attained their full size.

GATHERING SEEDS.

When the weather is fine, gather the different sorts of seeds as they ripen, and immediately that they are collected, spread them on a dry place, exposed to a free current of air; let them lie until they be sufficiently hardened, turning them every day, then having beaten and cleared them from their husks, and all other refuse, store them away in bags or boxes.

HERBS.

Plant all the sorts of herbs which have been propagated this season, either by cuttings or seeds, accordingly as they appear sufficiently strong and well rooted. Also gather flowers of medicinal and other herbs, and when dry, let them be put up in bags for use. Those which are in request for drying or distilling, as they advance to maturity, should be cut or gathered, and disposed of in a dry airy room, till they be distilled, or otherwise used.

SALADS.

Sow and plant successional crops of lettuces. Sow at the beginning, middle, and again at the end of the month. These sowings will provide lettuces for the months of September and October. Thin and transplant all sorts of lettuce fit for that purpose; allow plenty of room, and give occasional supplies of water.

TURNIP-ROOTED RADISH.

This is the best time of the year to sow the large black turnip-rooted radish, for autumn and winter use. There are two sorts, generally known by the name of the black and white Spanish radish, the former of which is held in the highest estimation, and is the most universally cultivated.

The seed may be sown any time during this month, some in the beginning of it for autumn use, and some for the principal winter crop, about the middle of it. It should be sown broadcast in an open space of ground that has been just dug, trodden down and raked in regularly.

When the plants have attained some size, they should be hoed out to about six or eight inches distant; in September and October they will be ready to draw for the table; by November they will have attained their full growth, and continue in perfection during the whole winter.

Some small turnip-radish may be also sown for autumn use, which should be principally of the white sort, mixing with it a small portion of the red. The radishes sown last month should now be thinned to about three inches apart.

SOWING SHORT-TOP AND SALMON RADISHES.

Short-top and salmon radishes may be sown any time this month to draw in August; but for a principal autumn crop to draw in September, some of each sort should be sown in the last week of this month. The seed should be sown in an open exposure, in ground that has been newly dug.

SMALL SALADING.

If a regular supply of small salading be required, some of each sort, such as mustard, cresses, &c., should be sown every week.

The seed should be sown on shady borders, in drills, and in dry weather should be daily watered, or it will not vegetate regularly. If the weather be very sultry, shade the crops during the greater part of the day with mats. A mat well soaked in water, kept in that state, and thrown over the beds when the seeds are sown, and there left until they vegetate, will greatly promote their growth; the mat, however, must be removed as soon as the seeds are fully above ground.

WORK TO BE DONE IN THE CULINARY GARDEN.

Attend to the directions given last month, as far as regards watering, clearing the ground of weeds, and hoeing and earthing-up all crops as they advance. Again give a general hoeing to the whole garden, remove all disagreeable objects, destroy insects and slugs. Attend to neatness and regularity in every part. Let all useless and decaying leaves and stems of vegetables be removed from among the crops, and carry them to any piece of ground that is to be immediately dug; this will not only give the garden a neat appearance, but will manure the ground on which they are put. The leaves and stems of all crops of cabbages, potatoes, carrots, turnips, &c., as they are daily gathered for use, are to be carried away to an unoccupied place and cut off, and as soon as convenient be dug into the ground, or carried at once to the compost-yard for making vegetable mould. They should not be left carelessly on the ground on which they grew, unless they be such roots of cabbages or borecoles as may be wanted to produce sprouts for a future crop.

AUGUST.

SOWING CAULIFLOWER.

Cauliflowers for the early crops of next year are to be sown this month at the middle, and again at the end of it. Long experience has taught the London market-gardeners to sow upon the 21st of the month, but that any one day in particular should be chosen, appears ridiculous. If they be sown too soon in the month, they are apt to button; and if too late, they will not be sufficiently strong to weather the winter. The first sowing may be made the end of the second week, and the second sowing the middle of the third. Sow on a border of light earth, and give water if the state of the weather demand it.

SOWING SPINACH FOR WINTER AND SPRING USE.

Spinach should be sown both at the beginning and also at the end of this month, to produce a supply during autumn, winter, and the spring months, until the spring-sown crops come in to succeed it. The prickly-seeded sort is to be preferred for this sowing, as being less tender than the round-seeded kind, and better calculated to stand the severity of the winter. Ground intended for spinach cannot well be too highly manured, as the larger and more succulent the herb is, the more it is esteemed. Spinach, however, when too strong, will not stand the winter so well as that, which is less succulent. Still, if the weather be mild, such strong crops will afford an abundant winter supply. As at this season there will be plenty of spare garden-ground, we have found it to be good practice to sow a piece of ground, slightly manured, with this crop, as a substitute for the other, should it fail during the winter. Whichever mode is adopted, it is necessary to choose a sheltered, but not a shaded situation for it, that is, one that is dry and well exposed to the sun. In wet soils, ridges may be formed a foot or eighteen inches high, on which the seeds should be sown; this will not only preserve the spinach, but also act as a winter fallow to the ground.

SOWING CABBAGE.

The cabbage, being a biennial, the principal crops are obtained by sowing the year previous to that in which the crops are to be reaped. A nice attention ought to be paid to the time of sowing this crop, which is the first or second week in August, this time being most conducive to ultimate success. Some sow in the end of July, to have plants stronger before the approach of winter, but of a crop so forward, many of them, and often all, run to seed in the spring; therefore, be careful to make the principal sowing neither sooner than about the fifth, nor later than about the twelfth of August. If sown sooner, many of the plants would run to seed in spring; and if sown later, they would not acquire sufficient strength before winter to enable them to stand severe weather. The sorts to be preferred for this sowing are early dwarf York, East Ham, early emperor, and sugar-loaf, for first crops; and large York, large sugar-loaf, Battersea, Penton, Imperial, Antwerp, Russian, &c., for secondary spring crops.

TRANSPLANTING CELERY.

Celery for a principal crop should be planted both at the beginning, middle, and end of the month. Make the trenches four or five feet wide, and bury in them a thick coating of good moist dung, on which set the plants in rows across the bed a foot apart, and five or six inches apart in the line. When planted, give frequent and copious supplies of water, and if the weather be hot and dry while the operation is going on, let them be shaded by mats supported on sticks laid across the trenches. The waterings must be continued while the dry weather continues, or until the plants be perfectly established. Celery, being indigenous to wet moist ditches, requires a more than ordinary supply of that element. Earth up the early crops as they advance, in doing which, care must be taken, at all times, not to let any earth fall into the hearts of the plants which would destroy the heart-buds, and cause them to push a number of stems, consequently they would be rendered wholly useless. This operation should never be performed in wet weather, nor in the morning, until the sun has absorbed all the moisture from the plants, otherwise the stalks would become scabbed, spotted, and be unfit for the table.

PLANTING COLEWORTS.

If a succession be required, coleworts may still be planted, as directed last month.

SOWING, PLANTING, AND BLANCHING ENDIVE.

About the middle of the month endive may be sown for a late crop. A number of those which were sown last month may also be planted out, according to the directions given in July (see *July*). The advancing crops must be cleaned and hoed, and if an early crop of endive be required, the blanching may be begun either by earthing, tying up with strands of matting, or in any other manner as directed in July. In a few weeks, it will be fit for use.

SOWING CARROT-SEED.

Carrot-seed may be sown in a moderate quantity, to rear plants to stand through the winter for spring use. Sow some the first week, and again about the end of the month. Choose a light dry spot to sow them on. Do not sow too thick, and take care to rake in the seed regularly.

SOWING WINTER ONIONS.

The most proper time to sow a full crop of winter onions is the first or second week in this month; the ground in which they are sown must be dry and rich, for if it be heavy or wet, the crop is apt to be thrown out by frosts. It is, however, beyond dispute, that this is the most proper time during the whole year to sow for a full crop, on land that is very light, for in ground of that nature, the crops which are sown in the spring are apt, in the summer months, to be attacked by maggots, and the crop is thereby entirely lost. This, however, is not the case with onions sown at this time, as before the heat of the summer sets in, the crops are well grown, and beyond all danger.

The most proper kinds are the Strasburg and Deptford, the preference, however, should be given to the former, and in order to insure a plentiful supply in the spring, the seed should be sown rather thickly, green onions being then in request, as well as a stock for transplanting.

LAYING DOWN THE CROPS OF ONIONS.

At this time the spring sown crops will be fast approaching maturity, and, with the view of forwarding them, and promoting the swelling of the bulbs, they should be carefully laid, according to the directions already given in May. Those which are in the most forward state will be fit to be taken up by the middle or end of the month, directions for which, see *September.*

PLANTING OUT SAVOYS.

Savoys for autumn and winter use should now be planted out. In order to have them of a fine size, the ground, if it has been previously impoverished, will require a good dressing of dung; but if planted where early potatoes, or such crops which have not much exhausted the ground, have been grown, they will attain a good size without any further preparation. Savoys, and all other sorts of greens, may with propriety be planted between rows of peas, beans, and similar crops, where ground is scarce, but in doing so, they should be well dunged. Choose the best formed plants, and plant them two feet, or two feet and a half apart between the rows, and fifteen or eighteen inches distant in the line.

ARTICHOKES.

The plantations of artichokes will now be coming into fruit: when it is the object to have large heads, all, or the greater part of the smaller ones, which issue from the sides, should be displaced; but when the small heads are used for culinary purposes, they should be thinned out while they are still young.

Three or four heads are a sufficient crop for plants of a middling strength, but those which are very strong and well-established may be allowed to produce a greater number.

Artichokes, in order to produce chard, should, as soon as the principal crop is gathered, have their leaves cut over about six inches above the ground, and their stems cut as close to it as possible. It is to be observed that, to produce chard, the plants will be destroyed, therefore a certain portion of the stock of plants should be set apart for that purpose, and on the supposition that new plantations are made annually to a certain extent, the loss of a portion of the oldest plants will be in conformity with good practice.

CUCUMBER PLANTS.—See *Forcing-Garden.*

BROCCOLI.

At the beginning of this month, prepare a piece of ground for the reception of a crop of broccoli, for which purpose an open spot should be chosen, not shaded by trees, and let the ground be well dunged, which will considerably improve the crop.

The plants should be set out in rows about three feet apart, and about the same distance, or at least two feet asunder in the rows, and immediately after planting them, give to each of them a moderate watering if the ground be dry.

The broccoli-plants which were transplanted last month should now have the earth drawn up round their stalks, at the same time giving them a liberal watering; this will strengthen them and forward their growth considerably.

PARSLEY.

Parsley may be sown this month, for winter and spring use, this being the most natural season for sowing biennials.

SOWING TURNIP-SEED.

For the latest crop, turnips may be sown at the beginning and towards the end of this month. The advantage should be taken of moist weather, or the seeds will be liable to fail.

The turnips sown last month should now be hoed and thinned out, for which operation a dry day should be chosen.

It is always the better practice to have them properly thinned out before they have grown too large, for which reason, as soon as the rough leaves appear, it is time to begin to thin them, as it can then be done with a greater degree of regularity. Thin them to about four or six inches apart. The sorts to sow at this time are the yellow Dutch and Aberdeen yellow, both excellent of their kind; a little of the Maltese yellow may be sown, being a beautiful and excellent small root. In families, where these may be objected to, on account of their color, the common round white may be substituted, but it is not so good a root for keeping.

SOWING AMERICAN CRESS.

About the middle or latter end of the month, black American cress may be sown on a warm border, or on beds of light dry earth, in any situation that is well exposed to the sun. It is very hardy, will stand the winter well, and come in for use early in the spring.

SOWING RADISHES.

Crops for autumn supply should be sown three or four times about the end of this month. A dry and rather sheltered situation is to be preferred, as has been already observed in the preceding month. The quicker these plants are grown the more tender and crisp will they prove. When stinted in growth, they become hard, sticky, and entirely unfit for use. The expense of the seed is trifling, and the trouble small, therefore repeated small sowings are to be preferred to larger crops, which would consequently take a longer time in using. Any of the kinds may be sown at this time with almost equal success.

SOWING BLACK SPANISH RADISH.

This excellent and useful winter salad should be sown at two or three different times during this month. As they have the property of keeping long after they are full grown, if stored in sand or in dry mould, in a sheltered situation, they may be sown in considerable quantity. Birds are apt to destroy the seeds of all the radish tribe, therefore precautionary measures should be taken to prevent the destruction of these crops.

SOWING SMALL SALADING.

Chervil may be sown in every respect as directed for American cress, and will stand during the winter, if not excessively severe.

Cresses, mustard, rape, &c. may also be sown once or twice during this month. They will continue longer fit for use than during any of the preceding months. Sow rather a large border of Normandy or curled cress, at the bottom of a wall or pales, it will prove an excellent salad in autumn and winter.

SOWING LETTUCE FOR SPRING USE.

Sow on an open border, or in light warm soils in the open quarters, a portion of brown cos-lettuce, broad-cast, but thinly, to stand the winter and to come in use in spring. If the weather be not unusually severe, they will stand the winter, and come in after those that have been wintered in frames, or under any other shelter, and will not run to seed so soon as many of the early spring-sown sorts.

HERBS.

Continue to cut or gather all sorts of pot and medicinal herbs, as directed in July, according to the season and their state of growth.

WORK TO BE DONE IN THE CULINARY GARDEN.

Hoe, weed, thin, and stir the surface among all crops; water, shade, and attend to neatness and order; clear off all crops, as soon as they are exhausted, in order that the garden may always present a neat and orderly appearance. As slugs and other vermin will be now making deplorable ravages among crops of young plants, a constant attention is required to subdue them. Those seeds which are ripening should be gathered when dry, and after being properly hardened, laid by for use in a dry airy seed-room.

Some seeds retain their vegetative properties better when kept in the pods or seed-vessels, until they are to be sown in the spring; these, when perfectly dry, should be hung up in bunches in an airy shed out of the reach of frost. Accordingly as the crops are removed, let the ground be cleared of the refuse, either by hoeing and raking, or rather by rough digging, which will give the garden a much neater appearance, besides very much improve the soil by exposure to the atmosphere. Where evergreen hedges are attached to the culinary garden, this is a proper season for clipping them, and when the box edgings require renewing or mending, that may also now be done with every prospect of success.

SEPTEMBER.

PLANTING ENDIVE.

A small portion of the endive which was sown in August may now be planted out for a late crop. A warm border, or a sheltered situation, should be chosen for the plants; the soil should be light, and with these advantages, this crop will have a good chance of standing during the winter. Attend to the directions given in June and July for the advancing crops.

The leaves of the early sown endive may be tied up to blanch, observing to perform this operation in dry weather. Choose the largest full-sized plants of luxuriant growth and full in the heart. The leaves must be gathered up evenly with the hand, and tied a little above the middle of each plant with some bass or a small osier twig.

BLANCHING AND PLANTING LATE CROPS OF CELERY.

The crops of celery as they advance should be earthed up as previously noticed. As the goodness of this crop depends on the attention paid to this part of their culture, it would be needless to mention, that the oftener that they are moulded up, the finer and more luxuriant will be the produce.

Crops to come in during the latter end of winter and in spring should still be planted, the latter of which should be set out in single trenches, as being more readily covered during severe frosts, and the plants will be less exposed to damp during the autumn, and consequently the process of earthing them up will be more readily accomplished.

EARTHING UP CARDOONS.

By the end of this month cardoons will have attained a considerable height; the blanching of them should be proceeded in accordingly.

For that purpose, provide a number of small hay-bands, with which their leaves should be tied closely and regularly together, for the purpose of enabling the mould to be put up round each plant. Let the mould be well broken, and lay it up about them as high as they are tied. Those earthed up now will be fit for use in October, November, and December, and for some time afterwards. In severe frost, they should be covered with dry litter, according to the directions given for celery.

CAULIFLOWERS.

The cauliflowers sown in August will now be fit for transplanting into a nursing-bed; for this purpose, prepare a bed of light rich mould, about the size of a common garden-frame, on which the young cauliflower-plants should be set, in order that, if cold and wet weather set in, the advantage may be taken of placing a frame and lights over them. This being done, draw from the seed-bed some of the finest of the plants, and deprive them of all their decayed or broken leaves. The plants which are crooked or black in their stems should be rejected. They should be planted in rows about three or four inches apart, allowing nearly the same distance between the plants in the row. Particular care must be observed not to plant them so deep as to bury their hearts, the consequence of which would be their total destruction.

The plants being set out, give them a little water for the purpose of settling the earth about the roots, but this operation should be performed in a very gentle manner, or otherwise the leaves may be broken or the earth washed into their hearts, either of which circumstances would prove highly detrimental to the plants.

If the plants be backward in their growth, and small in size, it would be advisable to set on the frame and lights, which must be continued on for a few days until the plants have taken good root. When this has taken place, the glasses are again to be taken off, and used only occasionally during the following month. Observe that the plants should have a shade thrown over them when the sun is very strong, and during the whole of the time that the lights are kept over them, air should be admitted to them, to prevent their drawing up too slender.

If any heavy rains come on, it will, under those circumstances, be necessary to put on the lights again, as a shelter to the plants. A superabundance of moisture would, at this time, be very injurious to the young plants, causing their stalks to turn black, and be the means, perhaps, of entirely rotting them.

The plants having remained in the bed for about five or six weeks, they should be transplanted where they are to remain under shelter during the winter.

MICHAELMAS CAULIFLOWERS.

Some of the cauliflower-plants which were set out in the month of July for a Michaelmas crop, will, towards the latter part of this month, or the beginning of the next, begin to show their heads. They should, therefore, be encouraged in their growth as much as possible, by drawing the hoe between the rows, and drawing the earth up round their stalks. They should also be kept clear from weeds.

If the weather in this month prove dry, dispose the earth round each stalk in the form of a basin, into which pour a quantity of water; by this means their growth will be so accelerated, that their heads will have attained a tolerably large size in October and November.

If at this season any neglect be shewn in watering the plants, the consequence will be that the heads will be very diminutive in size.

WINTER SPINACH.

The crops of this vegetable directed to be sown last month should be thinned out as they proceed, and completely kept clear of weeds, either by repeated hoeing, or hand-weeding; the former, however, is always to be preferred, as the necessary stirring of the surface encourages the growth of the plants. In wet weather, the latter mode of clearing them should be adopted. Crops may still be sown for spring use, and as the plants will be smaller than those which were sown last month, they will have a better chance of standing the winter.

ARTICHOKES.

As the young leaves of artichokes intended for chard, and which were put in a state of preparation for that purpose last month, advance to the height of a foot or eighteen inches, they should be tied together with strings of matting and then enveloped with clean straw, and gradually moulded up, as practised with cardoons, or the leaves may be carefully held together by the hand, and bound round with hay-bands, and the mould drawn round them.

MUSHROOMS.

Mushrooms have long been held in estimation in this country, and the cultivation of them is not of modern date. The early gardeners seem to have cultivated them on ridges of warm dung, and no mention is made by any of them of mushrooms having been found at any time of the year of natural growth.

The circumstance of their being so frequently found in almost all old pastures, in greater or less abundance, cannot, however, be supposed to have escaped their observation, and it is probable that from such places they procured their spawn. Indeed, one old writer on the cultivation of mushrooms directs, "when the beds are made, and of suitable warmth, look out for mushrooms, which will be beginning to appear by this time (*September*); when they are of the size of small peas, take up the whole mass and remove it to the bed prepared for them, taking care not to break the pieces, but as little as possible. Plant these pieces among the dung, which cover with a little mould, and in a few days they will be fit for use." The same end would most probably have been attained, had they remained in their original situation.

How far mushrooms may be considered wholesome, as an article of food, may be questioned. Few of the numerous family of *Agaricus* are eaten in this country. In other countries, for instance France, they are not so particular, and in Russia they are eaten almost indiscriminately.

The edible sorts are considered by Sowerby, in his work on English fungi, to be *Agaricus campestris*, or common field mushroom: this species is decidedly the best for all the purposes of the kitchen. *Agaricus violaceus:* this species requires a deal of boiling, and when properly done and seasoned is very delicious. *Agaricus pratensis*, *Agaricus procerus*, *Agaricus deliciosus*, when well boiled and seasoned, have the exact flavor of roasted muscles. *Agaricus orcades:* this species is often met with in old pastures, and always in a quantity together. It forms what is vulgarly called the fairy rings, on account of their growing in circles, which are not always but only sometimes perfect: the vulgar suppose, that these circles are traced by fairies in their dances, and some writers in the Philosophical Transactions consider them to be the effect of lightning. Mr. Cavallo, however, denies that lightning is at all connected in their formation. Others have supposed them to be formed by ants, which are generally found in them in great numbers. If the ground, however, be cleared away, to the depth of two inches, the spawn of this fungi will be found in abundance, and is of a greyish white color. This species may be eaten with safety, either in the common way, or made into catsup. *Agaricus virgineus*, *Agaricus solitarius*, *Agaricus lactefluus*, *Agaricus cinnamomeus:* these species when boiled have a pleasant flavor, and when fresh have a spicy perfume. *Agaricus aurantiacus*, and *Agaricus chantarellus:* of all these sorts, however, it would be highly dangerous for any person but the experienced botanist to collect as food, excepting only the *Agaricus campestris* and *Agaricus pratensis.*

There are other species of fungi, which are much esteemed by epicures, as well as those of the agaric family. The truffle, for instance, which is also a native of Great Britain, is sought after with much diligence by the truffle-hunters (its cultivation not being yet properly understood). Those plants, if they deserve that name, (but in strict botanical language they are nothing more than a fructification), are found in woods and chiefly under ground.

Unwholesome fungi will also often spring up, even on artificial beds in gardens: thus, when the spawn begins to run, a spurious brood often precedes a crop of genuine mushrooms. Great caution is, therefore, to be observed in the gathering of them; and even the edible garden mushroom, *Agaricus campestris*, when grown in certain places possesses deleterious qualities.

Mushrooms growing in woods, or by the sides of hedges, are seldom safe. Those growing in open old pastures should be preferred, and from such situations the mushrooms are supposed to be much more delicate in flavor, and more tender in flesh than those which are even grown on artificial beds. Young or button mushrooms grown on beds are, however, firmer and better for pickling, than those of the same size, growing naturally. In using cultivated mushrooms, there is evidently less risk in having the deleterious kinds intermixed, as the persons employed in cultivating them are more correct in their judgement between the wholesome and the deleterious sorts.

Accidents so frequently occur from eating spurious sorts of mushrooms; that the following extract from the Botanist's Companion may be useful and not devoid of interest.

" All fungi should be used with great caution, for even the *champignon* and *edible garden mushrooms* possess deleterious qualities when grown in certain places. All the edible species should be thoroughly masticated before taken into the stomach, as this greatly lessens the effects of poisons. When accidents of this sort happen, vomiting should be immediately excited, and then the vegetable acids should be given, either vinegar, lemon-juice, or that of apples; after which, give ether and antispasmodic remedies, to stop the excessive bilious vomiting. Infusions of gall-nut, oak-bark, and Peruvian bark, are recommended as capable of neutralizing the poisonous principle of mushrooms. It is, however, the safest way not to eat any of the good but *less common* sorts, until they have been soaked in vinegar. Spirits of wine and vinegar extract some part of their poison; and tannin matter decomposes the greatest part of it."

CULTIVATION OF MUSHROOMS.

That mushrooms are produced by seed is beyond all doubt, and, although exceedingly minute, it is proved by microscopic examination to be produced in astonishing quantities, and placed between the gills. Thin plates of talc have been placed under a large mushroom by Knight, as detailed in the Horticultural Transactions, at the period when the minute globular bodies, which are supposed to be the seeds, first begin to be disengaged from the gills, and the numbers which fell in a given period, within the narrow field of a very powerful lens, amounted, according to the nearest and lowest calculation that could be made, to two hundred and fifty millions of seeds, from one mushroom, in ninety-six hours. These seeds were mixed with unfermented horse-dung, and produced plenty of spawn. A great portion of these minute seeds is, probably, abortive, and, when ripe, are disengaged from the parent plant, and carried in all directions by the wind, or other effective causes, and falling upon bodies not congenial to their natures, many remain in a dormant state, or soon lose altogether their vegetative properties.

This seems to be the general case with the seeds of cryptogamous plants; the air at times must be replete with these minute bodies, which are blown about in all directions, and falling on all objects, vegetate in particular seasons on certain bodies and in certain situations, so that no space is left in the whole universe, that is not productive of the works of nature. Those seeds of mushroom, which may have fallen on matter congenial with their nature, make their appearance in due time, when put into a state of active vegetation by a genial temperature, and a proper degree of moisture. The dung of some animals seems to be the proper nidus for the reception of their seeds. That of horses is found to preserve them in a greater quantity, and with greater certainty, than any other. "Hence it would appear," says Nicol, "that their stomachs have less power to hurt or to destroy the vegetable quality of these seeds, which being collected along with their food, must pass through their intestines, than that of other animals; or perhaps the dung of horses is a better nidus for the seeds than other dungs. The food of horses, consisting mostly of corn and hay, may, no doubt, be more replete with the seeds of mushrooms than that of cows and other stock, whose food consists chiefly of green vegetables; but even the droppings of horses while at grass, or feeding on tares, produce few or no mushrooms. This fact would seem to prove, either that the seeds are collected in greater quantities, and are better preserved by hay, or the straw and chaff of oats, than by green food; or, that green food may have the effect of destroying them by its moistness in the stomach, or after having passed through it."

Having thus entered into some detail on the seed of mushrooms, the next and most important consideration to the gardener is, the manner in which to make or procure the spawn. Spawn is defined by Abercrombie, Neill, and others, to be a white fibrous substance, resembling broken threads, and is found running in dry reduced dung, or any other nidus favorable to its existence. These threads, when put in action in a favorable situation, produce small tubercles, attached to them by lateral threads, in the manner of potatoes. Spawn of the true *Agaricus campestris*, or eatable mushroom, smells exactly like that of the mushroom, and this is the test generally applied by gardeners to ascertain its genuineness.

Spawn is often purchased by gardeners from nurserymen, who, to supply their demands, make annually a great quantity of it. It is sold in the shape of bricks, and varies in price, according to the demand, and other circumstances.

Indigenous spawn may be collected in September in old pasture lands. It is often also found in the path of a bark-mill worked by horses, or in any other horse-mill track under shelter; in temporary sheds, in which horses are fed and take occasional shelter in winter, and in dry dung-heaps, and in old hot-beds. Having found the pieces of dung which contain the desired spawn, take them up as entire as possible, and lay them carefully in a basket, or any other conveyance; these are to be stored till used in any dry convenient place, and if they be found in a damp state, they should be dried before they are laid together in a mass. The dry spawn may be preserved for years; but to preserve it from running or perishing before it be planted, it is absolutely necessary to keep it in a dry place, through which there is a current of air.

Artificial spawn may be procured by the following process, which has been recommended by a successful cultivator of mushrooms, in the Memoirs of the Caledonian Horticultural Society.

In the month of March, when the cattle are fed principally on dry food, collect two parts of cow-dung, one part of sheep, and one of horse-dung, dry them well, and break them into small pieces.

When well mixed together, lay them up in a round heap, finishing the top into a point. Let the heap be well trodden whilst it is building, which will prevent it from heating too much. This operation must be carried on in a dry place, in some shade or old house. Thrust a stick into the heap when finished, and by drawing it out at any time, the heat can be ascertained. If, upon examining the stick, it feels slightly warm, then the heat is going on well. Care must be taken in this particular, for in the whole culture of mushrooms by this, or any other means, they are equally impatient of either too much heat, moisture, or cold. The best temperature for them seems to be from 55 to 60 degrees of Fahrenheit. When the heap is in a slight state of fermentation, cover it about four or six inches with straw. If the operation be carried on in a warm shed, then a single old bass-mat will be sufficient, but this must be regulated by the state of fermentation in the heap.

When the heap has been a month or five weeks in this state, examine it, by thrusting in the hand to the middle of the heap, and if the spawn have begun to run, it may be distinguished by the appearance of many small white fibres or threads running through the dung, and this is the real spawn. If there be no appearance of spawn, cover the heap up again, and add two or three inches of droppings fresh from the stable. This when again covered over, as at first, will set the whole in moderate fermentation, and at the end of another four weeks, the whole will be a mass of spawn, provided that the fermentation has not been allowed to exceed the temperature above stated. Sometimes it will make its appearance sooner, and by this means excellent spawn is procured. Spawn, procured in this manner, should be used soon after making, as it will lose its strength by long keeping.

Artificial spawn may also be procured by collecting the droppings of horses fresh from the stable, and after being partly dried, may be put up in any dry corner of a shed, mixed with a small portion of light sandy earth, that is quite dry. If this remain undisturbed for two or three months, the whole mass will be full of spawn.

In this case, also, fermentation must not be allowed to exceed the points noticed in the before-mentioned method.

Spawn, once obtained in small quantities, may be propagated or preserved at pleasure. The general method of preserving and propagating spawn is to transplant it, if we may so express ourselves, into bricks composed of certain materials, of which the dung of horses constitutes the principal part. Take any quantity of horse-droppings fresh from the stables, to which add about one-third cows'-dung, and a small portion of light sandy earth, or road-scrapings. Mix the whole together by adding such a portion of water, as will allow the whole to be formed into a thick sort of mortar. This being done, spread the mixture on the floor of a shed about four inches thick, let it remain in that state for a day or two, according to circumstances, to dry, and when it is sufficiently dry, let it be cut into pieces about the size of common building bricks. When these bricks are sufficiently dry to remove without breaking, carry them to an airy place, where they may dry sooner. For this purpose, place them on thin boards, they can then be moved about with greater ease. When the bricks are about half dry, perforate each in two or three places about half-way through, in which holes, place a small piece of spawn in each. Turn them frequently over to promote their drying. When perfectly dry, prepare a quantity of well-fermented dung; place a layer of it, six inches thick, on any part of the shed-floor; upon this dung, pile all the spawn-bricks in regular order, keeping the sides perforated uppermost, to prevent the pieces of spawn from falling out. Build the pile as open as possible, and let the whole terminate in a point, or single course of bricks. Take the remainder of the fermented dung, and cover the whole pile with it; it will diffuse a gentle heat through the whole. The spawn will soon run through the bricks, and when this is observed, let the bricks be laid by in a dry place till used. They will keep fit for use for a number of years. It is of much importance that the bricks should not be left in a situation which would cause the spawn to work; an effect, which would be produced by moisture, combined with warmth. The spawn must not be suffered to advance towards the rudiments of the mushroom, which consists of little threads or fibres, for in this state, it ceases to be of use in spawning a bed. A piece of spawn, which appears in filaments or fibres, is no longer of use to put in a mushroom-bed, it may produce a mushroom in itself, but can serve no other purpose. The spawn, that is to be inserted in a bed, and to receive its development there, must not be so far advanced, but should only have the appearance of white mould.

MAKING MUSHROOM BEDS.

The spawn being procured, the next consideration is, to make ready a bed on which to plant it. Many plans have been adopted for the cultivation of mushrooms on beds, which have been attended with greater or less success; the general methods practised by gardeners, who grow a considerable quantity for the London market, are perhaps the oldest, and at the same time the best. These beds are made in the open air, in some convenient spot, and are in the form of a ridge, or triangle, the base of which is generally the longest side. In gardens, where neatness and regularity are attended to, the melon-ground will be found the best situation.

For winter-crops, beds may be made in any spare shed, or old building; and it may here be observed, that, although September is the month generally chosen for putting up mushroom-beds, they may be made with success almost at any other time of the year. When beds are made in sheds, they are apt to get too dry in summer; in the open ground, the humidity of the air keeps them in a state sufficiently damp, without the necessity of often giving them water, which is a very delicate point in their culture. If it were possible to keep them sufficiently damp, by covering them from the sun and winds, and exposing them to very slight showers, or rather heavy dews, it would be desirable, as watering, however carefully done, is apt to run upon the surface, and render some parts of the beds too damp, while others are too dry.

The principal objection to beds made in the open air is, that they are troublesome to cover, and to protect from frost and wet; but beds made in sheds also require often to be covered in the same manner.

The advantages they possess, on the other hand, is important, as the mushrooms produced on ridges are considered, in Covent-Garden market, as decidedly superior to those grown on shelves or boxes in houses, being both more heavy and juicy, and always bring the highest price.

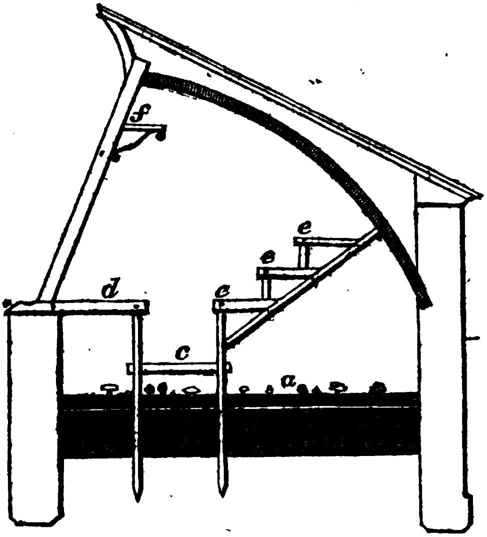
About a fortnight or three weeks before the beds are to be put up, provide a quantity of fresh horse-dung; let it be well shaken and mixed, and put up in a heap to purge it of its firy heat; let it be turned over once a week, or oftener, and at each turning, well mixed, so that every part of the dung may be equally fermented, and deprived of its noxious quality. When the dung is in a fit state to be made into a bed, let the bottom be marked out, about seven feet wide, and as long as it is judged necessary, for the quantity of mushrooms required; let the foundation on which it is made be dry, or rendered so; let the dung be worked up in a sloping manner, so as to terminate with a narrow roof-shaped ridge along the centre, about four or five feet high, beat it well down, as the process of building goes on. Beds made in the open sheds are constructed exactly in the same way.

When the bed has been made some time, and the heat sufficiently declined, the spawn may be put into it: but, for fear of the heat being too great in the upper part of it, the better plan is to spawn it at first only half-way up all round. Break the spawn in small pieces, and stick them into the sides of the bed, in rows about six inches, piece from piece. When the bed is spawned as high up, as it is thought the heat of the bed will not injure it, take some good strong rich earth, the stronger the better, but of a loamy quality, and cover the spawned part of the bed with it, about two inches thick, beginning at the bottom of the bed. The earth should be in a pliable state: not too wet, nor over dry. When the heat appears to have sufficiently declined, proceed to spawn, and earth the top of the bed in the same manner. Or, if it be thought that the bed is not sufficiently fermented, spawn it a few days before, or even a week or more before the mould be put on it.

After all fermentation has stopped, and on the approach of wet or cold weather, the beds should be covered sufficiently with clean straw, and over that, bass or reed mats should be placed; the latter will have the effect of completely throwing off the rain. Care must be taken that, after this covering is put on, they do not heat a second time, which is very liable to take place, as the remaining heat and steam will be prevented from escaping, and were that circumstance to happen to any considerable extent, the spawn would run a great risk of being completely destroyed. This covering must be occasionally removed, at least so far as to admit of the beds being examined, at least once a week, for the first few weeks after being covered. Little injury can be apprehended, at any subsequent period, from too much heat. Beds constructed in this manner sometimes lose their heat too soon, and when that is the case, the mushrooms will be small, the beds unproductive, and sometimes the mushrooms will not appear at all. On this effect being perceived, the covering should be entirely removed, and a coating of well-fermented stable-dung applied over them to the thickness of a foot or more, according to the season, and the quality of the dung; this will throw a genial warmth into the bed, and will set the spawn in action. This being accomplished, the whole may be removed, and the beds covered up as before.

The length of time that elapses between making the beds and producing the mushrooms, depends upon a variety of circumstances, such as the state of the weather, the quality of the spawn, and the like. Generally, they begin to produce in a month or six weeks after being put up, and continue to produce for ten or twelve weeks, and often for a considerable time longer. The process of gathering the crop is to uncover the beds carefully, and cut the mushrooms up by the bottom, taking care not to displace nor injure the young ones which are coming up close to them. As far as can be with safety accomplished, the old stumps or root-part should be removed, having a tendency, when left in the beds, to produce decay, damp, and maggots. The larger mushrooms are used for a variety of purposes, but the smaller or button ones are most esteemed in cookery.

Mr. Napoleon Bauman, Jun., of Bollweiler, in the Upper Rhine, has, in a letter addressed to the Editor of the Gardeners' Magazine, transmitted to him an account of a very simple and economical method of growing mushrooms, which will be understood by a glance at the accompanying sketch, where the mushrooms are represented rising through a stratum of earth (*a*); which, with a substratum of dung, occupies the entire floor of the house (*b*). The pathway (*c*) is supported from the floor by the posts which are rendered necessary at any rate for supporting the front shelf (*d*), and the shelves of the stage (*e e e*). Vines may be trained upon the rafters, and there may or may not be a small shelf or a bracket here and there for drooping plants (*f*). In the vicinity of Vienna, houses in which mush-



rooms are grown in this way are chiefly employed for prolonging the bloom of forced shrubs and flowers, such as roses, lilacs, bulbs, &c. The pots are set in saucers, to prevent any water dropping on the mushrooms, and six inches of hay are spread over the latter to keep them clean, and prevent the escape of heat. The glass is covered by shutters every night, and the floor of the house is from three to four feet under the external surface, which with the covering of hay is a great protection to the bed in which the mushrooms are grown.

The bed is made of fresh horse-droppings, strongly pressed, and after it has lain eight days, it is covered with an inch of good earth beaten to a firm state, and the spawn planted in it in little bits about nine inches apart every way.

For growing mushrooms in flued houses, see *Forcing-Garden.*

Mushrooms may also be successfully cultivated in boxes, pots, or hampers, or indeed in any thing capable of keeping the materials together, and placed in any dry warm cellar, stable, or shed, where they can be defended from damp and frost. The practice of Mr. W. Wales, as given in the Memoirs of the Caledonian Horticultural Society, and referred to before, is as follows: "The boxes or vessels are placed in the back sheds of the hot-houses, or in any other house where no damp nor frost can enter. There should be several boxes, a part only being filled at a time, so as to keep a rotation of crop, and to have mushrooms at all times ready for the table. Suppose three boxes to be filled at a time, each of which is three feet long, one and a half broad, and seven inches in depth; then let each box be half filled with horse-dung '*droppings*' from the stables, the fresher the better, and if wet, to be dried for three or four days before it be put in the boxes, the dung to be well beaten down in the boxes. After the second or third day, if any heat has arisen in the dung, it is then a fit time to spawn; break each spawn-brick into three parts, as equal in size as possible, then lay the pieces about four inches apart upon the surface of the dung in the box, on which they are to lie for six days, when it will probably be found that the side of the spawn next to the dung has begun to run in the dung below; then add an inch and a half more of fresh dung upon the top of the spawn in the box, and beat it down as before-mentioned. In the course of a fortnight, the box will be ready to receive the mould on the top; this mould must-be two inches and a half deep, well beaten down with the back of a spade, and the surface made quite even. But before the box be earthed over, it will be proper to take up a little of the dung as far down as almost the bottom of the box, in order to ascertain if the spawn has run through the dung, if that has not taken place, let the box stand unearthed for some days longer, for were it to be earthed over before the spawn had run through the dung, the crop would be very scanty. In the space of five or six weeks, the mushrooms will begin to come up; if then the mould seem dry, give a gentle watering, the water being slightly heated before its application. This watering will make the mushrooms start freely, and render them of a large size. The boxes will continue to produce for six weeks, and sometimes for two months, if duly attended to, by giving a little water when dry, for they need neither light nor air."

This opinion is in unison with that of Nicol, Abercrombie, and most authors on gardening, but as mushrooms are produced naturally above ground, where they enjoy a sufficiency of both light and air, it is probable, that both contribute materially, in some way or other, to their perfection. If cut as button-mushrooms, each box will yield from twenty-four to forty-eight English pints, according to the season and other favorable circumstances.

The plan above described is preferred for yielding a number of mushrooms, and also where a great many are required, but their flavor is best when reared without dung. They are not then to be distinguished from those which grow naturally in the fields; but few are comparatively produced in this way. "I have," he adds, "lately found it very useful to add to every three barrow-loads of horse-dung, one of perfectly dry cow-dung, beaten down to powder as it were, and well mixed amongst the horse-dung, after the horse-dung has lain under cover for four or five days to dry." This addition of cow-dung was made in consequence of the effect it has to dry up the superabundant moisture in the horse-dung, and to render the compost in the boxes more compact, as the closer the whole is pressed together, the better the spawn will run.

The same cultivator details his process of growing mushrooms in boxes without dung in the same memoirs, as follows: "Take a little straw, and lay it carefully in the bottom of the mushroom-box, about an inch thick or rather more. Then take some of the spawn-bricks and break them down, each brick into about ten pieces, and lay the fragments upon the straw as close to each other as they will lie. Cover them up with mould three and a half inches deep, and well pressed down. When the surface appears dry, give a little tepid water, as directed for the last way of rearing them, but this method requires about double the quantity of water of the former, owing to having no moisture in the bottom, while the other has the dung. The mushrooms will begin to start in a month or five weeks, sometimes sooner, sometimes later, according to the heat of the place where the boxes are situated. They do not rise so thick, nor of so large a size, nor do they continue to be produced so long as in the other plan with dung."

The Rev. W. Williamson, in Hort. Trans., spawns his melon-beds over after the violent heat has subsided, and obtains a crop of mushrooms in autumn. The essence of that paper is as follows:—The spawn is introduced upon the surface of the bed, and on the side of the hills, as soon as the violent heat is over; the whole process of the culture of the melons is, as if there were no spawn in the beds. The mould is laid on the usual thickness, and, as usual, of a strong loamy nature, and well beaten or trodden when put in. The spawn remains to run or extend itself all over the bed till autumn, when the melon crop is over. The surface of the bed is cleared of the vines and weeds, and the glasses put on and kept close; when the mould appears dry, water is frequently, but moderately applied, and the bed is exposed to fine warm showers. The watering and shutting up produces a slight fermentation in the old materials of the bed, and this slight heat tends to the production of mushrooms in abundance. When the coldness of the season prevents the growth of mushrooms, the frame and lights are kept on till spring, when they are removed, and the bed covered with straw. The genial showers of spring cause the mushrooms to be produced again in considerable quantities, until the droughts of summer render it difficult to keep the bed sufficiently moist for their production. Sometimes the beds are allowed to remain undisturbed, and in such cases, produce crops the second autumn; but more generally they are taken to pieces, and the spawn collected out of them, and reserved for future beds.

It is conjectured, and we think with every chance of success, that such beds might be made to produce crops during winter, by the application of moderate linings of well-prepared dung, sufficient to repel the frost, and keep the spawn in an active state. It will be necessary, in applying water during winter, to have it rendered moderately warm, but little of that element will be found to be necessary, the steam produced from the bed being almost sufficient.

Mr. Hogan, in Hort. Trans., recommends growing mushrooms on hollow ridges. "The exterior form of my bed," he says, "resembles the old ones as built against a wall; but, instead of building it solid, it is hollow. Strong stakes are inclined against the wall, at an angle of about 65 degrees, on which hurdles are placed to support the bed. By this means a cavity is formed under the stakes between them and the wall and floor, for the purpose of receiving dung, which, being readily changed, (the ends of the cavity being open,) an opportunity is thus afforded of keeping up a permanently moist heat in the bed, the absence of which, together with an insufficient depth of mould for the spawn to run in, is the great defect of all other modes of raising mushrooms with which he is acquainted. On this structure, fourteen inches of rotten dung, and four inches of loamy earth, were laid and beaten firmly, and the spawning, and other processes and results, were the same as usual." From this mode, says an enlightened horticulturist, we fear two evils:—"Occasional over-heating and over-drying, either of which is ruinous to the mushroom." But, in our practice, we have succeeded in producing very good crops by the same process, but as our bed was constructed within an old vinery, probably the necessary humidity of the house counteracted one of the evils feared, and the warmth of the house rendered the application of much heat from below unnecessary.

In the whole culture of the mushroom, it is absolutely necessary, in order to ensure final success, to guard against overheats, and too much moisture; the effect of the beds becoming dry only retards the production of the crop, without lessening the chance of their appearing in abundance when rendered sufficiently moist, and as it is always easier to apply water than to dry the beds, it is better to err on the safe side. The more compact the whole bed, together with the mould, can be made, the stronger will the spawn run, and the less liable will the beds be to become suddenly too moist or too dry. The greater the depth of material, the more juicy and productive will the crop be, and the more they are exposed to the action of air and light, the finer will their flavor be.

COLEWORTS.

Some of the colewort-plants which are the forwardest in their growth, and which were sown about the end of July, may, about the beginning or before the middle of this month, be transplanted into the places where they are intended to remain for spring use.

A sheltered part of the garden must be chosen in which to plant them out, where they may be protected from the influence of the sharp cutting winds of winter. They should be planted in rows about seven or eight inches apart, and the rows should be ten inches or a foot distant from each other.

Some of these plants will be fit for the table at Christmas, although the sowing may have been principally intended for the use of the ensuing spring.

CABBAGE-PLANTS.

The cabbage-plants which were sown about the middle of August for an early crop in the ensuing summer, should, towards the middle or latter end of this month, be pricked out on nursery-beds.

A piece of good ground should be allotted for them in a well sheltered situation, which should be well dug, and divided into beds of about three feet and a half or four feet wide.

The plants must be regularly pulled from the seed-bed, preferring those which are the most luxuriant in their growth, and leaving those of lesser growth to remain a fortnight or three weeks longer.

Set the plants in longitudinal rows on the bed, about four or five inches asunder, allowing about half a foot distant from row to row. Close the earth well up about their stalks, leaving the surface smooth and even between the plants.

The planting being finished, give the plants a moderate watering, which, if the weather be dry, should be repeated three or four times for the first week or ten days, after which time, the plants will have taken pretty good root.

BROCCOLI.

About the first or second week of this month, the last crop of broccoli should be transplanted where they are intended to remain to produce their heads.

A piece of ground should be prepared for them in a warm situation, and they should be planted in rows about a foot and a half apart; and about the same distance from each other in the rows.

All weeds must be destroyed which may have sprung up between those rows of broccoli which were planted out in any former months; hoe the ground, and draw the earth up round the stalks.

LIFTING THE CROPS OF ONIONS.

It is now time to take up the full crops of onions, for after the middle or the end of this month, they will advance little in their growth; they must be spread thinly on the ground, and if the weather be rainy, it were more advisable to remove them to a gravel walk, or to a space covered on purpose with sand or gravel, and exposed to the full influence of the sun. They must be turned over regularly once or twice a day, until they be thoroughly dried, and then stored away in any well aired loft, barn, &c. If they be here spread thickly, they must still be turned occasionally; or they may be strung up by the tails, or hung in nets. If it be not intended that the onions should be strung, the better plan then is, before they are housed, to deprive them of the tails and outer husks, especially the latter, the greater part of which comes off by the simple process of rubbing.

TRANSPLANTING LETTUCES.

About the close of this month the different sorts of lettuces, the seed of which was sown about the middle or the latter end of August, and which were intended for the service of the ensuing spring, should be planted out into the borders, where they are to remain for use.

A warm border, under a southern wall or fence, should be prepared for them, and in digging the ground, the border should be laid in a sloping direction towards the sun, and its surface afterwards smoothly raked. Some of the best plants must then be chosen from the seed-bed, pulling off all decayed and broken leaves, and giving a partial trimming to the extremities of the roots, place them in longitudinal rows about five or six inches distant from each other, allowing nearly the same space between the rows.

If they survive the winter, one half of them may be thinned out regularly in the spring, and transplanted into a more open situation, leaving the remainder in the border to cabbage early.

If lettuce-seed were not sown in the month of August for the above purpose, it should not now be longer deferred; the first week of this month will be sufficiently early, provided the situation be warm and sheltered.

LETTUCES FOR WINTER USE.

Towards the latter part of the month, the lettuces required for winter use should be planted in beds in the driest part of the garden, and well exposed to the sun; the beds should be in every respect of the size of a cucumber or melon-frame, for the purpose of admitting them to be readily covered in bad weather.

In these beds some of the best seedling brown Dutch, or common cabbage-lettuces, should be planted, at about the distance of seven or eight inches apart each way, and as soon as the weather begins to be cold, place the frames over them and cover them occasionally with the lights, or some close covering, when the cold is severe.

Some of these plants will be fit for the table by the latter end of December, provided that the season has not been very severe, and that a proper course of management has been pursued with them. In January and February they will be tolerably well cabbaged, and in March will be in high perfection.

SOWING LETTUCE FOR FRAMES.

About the middle, or any time before the end of this month, some of the different sorts of lettuce-seed should be sown for the purpose of planting in frames in October, to come in use in the spring and the early part of the summer. In very wet weather, they should be sheltered by drawing glasses over them, or any other appropriate covering; and if those which are to be transplanted now into the open borders should be destroyed, those sown at this time will be ready to supply their place.

The sorts most proper for this sowing are the Silesia and brown Dutch, the latter sort in particular; the seed should be sown on a bed of rich earth, situated in a warm exposure.

SMALL SALADING.

The different kinds of small salading should now be sown every eight or ten days, the sorts principally required are mustard, cresses, and rape.

It will be necessary at this time to sow these seeds in a warmer situation than in the preceding months, and the ground prepared for them should be light and rich.

Towards the middle of the month some of these seeds may be sown on a warm border under a southern wall, or a fence having a southern aspect.

If the weather prove wet and cold at the end of the month, some of each of the above-mentioned sorts should be sown in frames, and covered occasionally with lights, or they may be sown under bell or hand-glasses, for unless they be covered in cold weather, particularly in cold nights, they very rarely arrive at any degree of perfection.

Experience has shewn that these plants flourish best when sown in drills, which should be very shallow, nor should the seeds be covered more than a quarter of an inch, which should be done with light earth, or they may be left uncovered, and will succeed equally well.

WORK TO BE DONE IN THE CULINARY GARDEN.

Remove all decayed leaves, haulm, and stems, and the remains of all crops which have been used, so as to preserve order and neatness, and make way for winter crops, or winter fallows.

Destroy insects and vermin of all sorts; save all sorts of seeds that may be ripe; keep all the walks in, and entrances to the garden, in a neat and orderly manner.

All vacant ground, as soon as the crops are removed, should be trenched, where it is necessary, and rough dug, where trenching is not necessary; but let this only be done in dry weather, and when the ground is in a fit state.

Prepare ground for crops of onions for next year's sowing: for this purpose, make choice of the ground that they grew upon this year, but if there be any reasonable objection to that, choose another piece. Let it be well manured with very rotten dung, or rather with a compound of rotten dung, decayed vegetable matter, and fresh loamy mould. Let this be spread equally on the surface, and then dug in to an ordinary depth; lay the surface up as roughly as possible, so as to present as much surface as possible to the action of the winter's frost: this will be in good state by next spring for pointing over, and sowing the seed.

OCTOBER.

SOWING PEAS.

Peas for the early crops of next year may be sown about the end of the month, choose a warm south border fully exposed to the sun. The sorts to sow at this time are, the true early frame, Charlton, nimble taylor, and hotspur. Sow either across the border, or longitudinally, according to the width of the border; or sow one row longitudinally, about four feet from the wall, and plant a row of beans three feet in front of that. By this means, the one will not much shade the other, nor will either shade the wall-trees. By sowing longitudinally, the pea hand-glass, already described, can be used with more propriety. Observe, as has already been directed, to sow on the surface, and cover only about three inches deep; or if the soil be cold and wet, it were better to draw the mould up into small ridges a foot in height, and sow on the top of them. Or, to make ridges two feet high, and sow one line on the north side of the ridge, and another on the south. This is to be understood, when the lines run longitudinally and not across the south border. Should both rows stand the winter, the one on the north side, when sufficiently strong, may be transplanted to another border, or other sheltered place.

A few early frame, nimble taylor, or any other approved sort of early pea, may be sown towards the end of the month in a sheltered spot. They should be sown thick in a bed, and when the weather sets in severely, they may be covered over with a frame and glasses, or other more convenient shelter, occasionally during winter. In spring they will be fit to transplant out into rows in the borders. In cold damp situations, peas will by these means stand the winter where they would not in the open ground. Pieces of turf may be placed under them, when sown, as recommended by Messrs. Bishop and Bisset, to facilitate their transplantation. Or peas of any of the above sorts may be sown in shallow boxes or pots, and protected during winter in a similar manner. Peas thus treated will come into fruit sooner by some days than such as stand out all winter, and, with little trouble or protection, will stand the severest frosts.

SOWING AND TRANSPLANTING LETTUCES.

The lettuce-plants raised from the seeds sown in August or beginning of September will be now stout plants. These should be now planted out where they are to stand the winter. A dry sheltered warm border should be prepared for them, by being neatly dug, in which the plants should be planted eight or ten inches apart. If the winter be mild, they will come into use in December and January, and continue good longer, if occasionally sheltered in bad weather. Sloping banks are formed by those persons, who depend much upon this crop during winter and early in spring, upon which the plants are planted rather thickly together, as they will be afterwards gradually thinned for use. In damp situations, and in cold heavy soils, this is a good practice, as these plants would do little good without this or a similar protection. In light sandy soils and warm situations, the hardier kinds of lettuce will stand most winters without any protection whatever. The plants for late autumn use should not be transplanted, but left where they grew, to be cut as they arrive at a proper size. They should, however, have the earth well stirred up about their roots, and all weeds and decayed leaves removed, as well as all useless plants, and thinned out to nine or ten inches apart. Where frames and glasses, or hand or bell-glasses are to spare, they may be now filled up with lettuce-plants, both of the August and September sowings. The larger of the former sowing may be forwarded in size, as the glasses can be kept upon them when necessary, never, however, omitting to give plenty of air to prevent them from being drawn up weak. The plants of the latter sowing should not be covered, unless in very cold or wet weather; the less protected that they are in autumn, the better will they stand the winter. Lettuce may also be planted at the bottom of the garden-walls, where they often survive the winter and come into use in spring, when those in frames have been used, and those in the open borders' lost. A small sowing of the hardier kinds may be made in a sheltered spot: should they come up and stand the winter, they will be extremely useful in spring, affording a crop between those which have withstood the weather, and those which are to be sown for the earliest spring-crops.

In preserving lettuce, or any other crop, through the winter, it is a particular point in the management, that they be kept completely clear of weeds, dead leaves, and every thing that would induce a state of damp or decay. Coal-ashes have been found useful when sprinkled between the plants to about the thickness of three-quarters of an inch, these having a tendency to absorb moisture, render the air round the plants less humid, and tend also to keep off the slugs in autumn. We have tried pulverized chalk for a similar purpose, without observing much difference in the effect.

BLANCHING ENDIVE.

As the plants of endive attain their full size, they should be blanched, in which state only can they appear at table as an ingredient in salads. However, for some culinary purposes, they are often used without being blanched. Many are the ways by which gardeners whiten or blanch endive; the most primitive probably was merely tying up the leaves with pieces of bass, this is still often practised, and answers the purpose in proportion to the attention that is paid to the process. Others cover the whole plant while growing with a slate or tile, and many cover them in rows by placing two boards edgeways, so as to meet at their top. Some, after tying their leaves up, cover them nearly over with mould, sand, saw-dust, &c.; while some cover them with inverted flower-pots, having the holes in their bottoms stopped; this is an expeditious and commodious method, as the plants are kept dry, and the progress of the blanching can be easily examined. But the most effectual and better way is to have blanching-pots for the purpose. These pots are made similar to those used for blanching sea-kale, but only a foot in diameter, and six or eight inches high, having a knob at their top, by which they are removed with greater facility. Sea-kale pots are also often used for this purpose, and answer equally well, as far as the blanching of the crop is concerned, but they are less convenient from their greater size.

In whatever way endive is blanched, it is of the first consequence that the plants be perfectly dry before the process commences; to ensure this, they should only be covered in the afternoon of dry days.

PLANTING ENDIVE FOR WINTER AND SPRING USE.

Endive should still be planted for a successional crop, and at this season, a dry and sheltered situation should be chosen; but, when the situation or soil is damp, banks or ridges should be thrown up, on which to plant them. The steep sides of asparagus-beds are often planted with endive and lettuce by the London commercial gardeners, who find them, by such means, to stand the winter well. They also raise banks three feet, and often more, in height, upon the sloping sides, on which they set the plants. Private gardeners, who have much less ground, often fill their spare cucumber-frames, or pits with endive, in which they remain during the winter, and are blanched at the same time.

SOWING CARROT-SEED TO STAND THE WINTER.

In favourable situations, carrots are found to stand the winter, and when that is the case, they come in as a useful vegetable in spring, long before those sown for general crops are fit for use. It is needless to say, that the warmest situation should be chosen for this crop. As the chance of their standing is precarious, and as they are to be used when very little, a small spot of ground will be sufficient for an ordinary family, as they may be sown very thick.

TAKING UP AND STORING POTATOES FOR SEED AND WINTER USE.

Potatoes should now be taken up in dry weather, if sufficiently ripe, and stored by for winter and spring use. Potatoes intended to be eaten, probably cannot be too ripe, as we suspect that a greater portion of better prepared fecula abounds in them, than in such as are taken up before they are fully ripened. Such, however, as are intended for seed, it has been stated, should not be allowed to become too ripe, as, in that case, they are more subject to the disease called the *curl*, which is often very detrimental to the crops. In taking up potatoes, whether for eating or seed, it cannot be denied that by far too little attention has been paid to keep each sort separate. Cultivators, generally, make little distinction between the kinds, no farther than merely keeping such as they term early potatoes, separate from the late ones. But, amongst the latter, there are many varieties better calculated for keeping than others; these should be kept separate, and those sorts used first, which are not found to keep so well. It is necessary that they should be taken up when the ground is perfectly dry, more particularly in damp strong soils, and either housed in places for the purpose, or piled up on dry ground in a conical form, and covered a foot thick with straw, and then a foot of mould placed over it, leaving the surface of the whole as smooth as possible, the better to throw off the rain. This is the general practice in Scotland, where much attention is paid to this valuable root. But we have seen, in chalky countries, excellent potato-houses cut out of the solid chalk, in situations where there was no chance of their being injured by damp or under-water, such houses being roofed over, and the roof only being above the surface, preserved them well for a great length of time. In such houses, there are often separate divisions formed of boards, into which the potatoes are placed, each kind by itself, and were potatoes buried in deep wells sunk on purpose, and perfectly dry, they might, probably, be kept for some months longer than in the usual ways.

TAKING UP CARROTS.

Carrots, when left too long in the ground, are liable in some soils to be attacked by worms; for this reason, and their being more readily got at during winter, they are taken up at this time. In taking them up, they should not be broken nor wounded with the tools employed for that purpose. Their tops should be cut off about half an inch above the root: they may be stacked in a shed or spare house in dry sand, laid in layers of roots and sand alternately; or, they may be stored in the open ground as directed for patotoes (*which see*).

TAKING UP PARSNEPS.

The parsnep is a native of many parts of this country, as well as the carrot, therefore both will remain in the ground uninjured by frost. The difficulty of getting them out of the ground during frost, induces us to take up a portion of them in autumn. They are stored in the same manner as carrots. (*See the foregoing article.*)

PRICKING OUT CAULIFLOWERS.

The cauliflowers sown in August or the beginning of September, will now be fit to prick out in beds, where they are to remain during the winter. For this purpose, prepare a piece of ground in a sheltered, but not a shaded situation, of the sise of one or more garden-frames: having sufficiently dug the ground, which should be well broken with the spade, proceed to set the plants in regular distances, of about four inches apart each way. When they are planted, give a watering to settle the mould about their roots; place a frame over them, if such can be spared, and cover them with the glasses for a few days, until the plants have taken root. Afterwards expose them as much as the state of the weather will admit, only covering them, when there is the appearance of frost or continued rains. Keep them clear of weeds and dead leaves, and guard against the attacks of slugs and mice. Cover the surface of the ground with coal-ashes, or fine sharp sand, which will resist the damp. If the convenience of frames be not to be had, prick them out in the same way under a wall or pales, sloping the ground in the process of digging towards the sun. Or, they may be protected in beds on a warm spot, covered occasionally with mats, supported by hoops. In either case, let them enjoy a free circulation of air, and be kept as dry as possible.

STORING CAULIFLOWERS.

Cauliflowers may be preserved for a considerable time by various methods. About the end of the month, pick out all those which are close, and well shaped; lift them carefully with a spade; dress off most of the leaves above the flower; remove them to an open shed, and lay them in by the heels, as it is called, among rotten tan, or dry mould, place them closely together, but not so as to touch one another. In this state, if kept free of damp, they will continue good for some time after those in the open air are exhausted. They may also be carefully taken up, and stored in the same way in the borders of any peach-house, or vinery, observing to shut up the lights during rain, and also on frosty nights. They may be also protected in deep garden-frames, or they may be taken up in a dry day, and carried to an airy shed, and tied in pairs, and hung up on poles or strong nails, with their heads downward; or they may be cut over about six inches below the flower, and a few of their leaves left to be wrapped round them, and buried about eighteen inches below the surface in a dry bank, or among sand in a cellar, or other house.

The most successful method we have practised for preserving cauliflower in perfection through the winter months, is to cut them in dry weather; dress off all their leaves, place them in an airy place to dry for a day or two, then bury them in casks, or boxes, amongst bog-mould. The best sort of bog-mould for this purpose is that, which is composed of vegetable matter, principally such as is generally dug for fuel. This sort is antiseptic, and capable of resisting putrefication, particularly when excluded from atmospheric air. A stronger proof cannot be adduced, than the many vegetable bodies which we see constantly dug out of this matter in a state very little changed from their original; although, in many cases, they may have been deposited there some hundred years ago. The mould which is used for cultivating heaths, and other tender-rooted plants, and which is generally called bog-mould, is not so fit for this purpose as the former, probably this sort should be denominated heath-mould, being always found on the surface of uncultivated heaths, &c. The heads or flowers of cauliflowers preserved in this way, should be well washed previously to using, as they become black when buried any length of time; not that such blackness proceeds from any decomposition of the heads, but arises from the more subtile particles of the mould adhering to their surface.

PLANTING BEANS.

About the middle or end of this month, plant some beans to come forward as an early crop in the ensuing summer; they will be fit for use about the end of May, or the beginning of June.

The mazagan bean is the best sort for planting at this season, on account of its coming in earlier than any of the other sorts, and although they be of low growth, yet they are plentiful bearers; they also possess the property of standing the winter better than almost any of the other sorts.

The best situation in which to plant them at this season is under some southern fence, in rows across the borders, which rows should be two feet or two feet and a half apart, planting them about three or four inches distant from each other in the rows.

It is the common practice with many gardeners, when they plant their beans for an early crop, to set them, in the first instance, pretty thick on a bed of good earth, and as soon as they have attained a moderate height to transplant them into the borders, according to the following manner. Let a bed of good earth be dug up in a convenient warm corner, then draw about two inches of the earth from the surface, and scatter in the beans pretty thick; after which, cover them with the earth which was drawn off the bed; or draw some drills across the bed with a hoe held flatways, throwing in the beans rather abundantly, and then immediately afterwards draw the earth regularly over them.

After the beans have come up, and have attained an inch and a half or two inches in height, they may be transplanted, when the weather is mild, in rows, according to the directions already given. Particular care must be taken that the earth be well closed about every plant, and then they will soon grow very freely, and be sufficiently rooted to bear the winter's cold; or they may be left in their native bed till the spring, and then transplanted, protecting them through the winter with mats, or frames with glasses.

The principal reason for adopting this method is, that it is generally allowed that those beans, which are transplanted, will come in sooner by a week or a fortnight, than those which are planted where they are to remain, at the same time that their produce will be greater.

LIFTING AND STORING BEET.

The crops of red beet should, at the close of this month, be taken up and laid by for winter use. For this operation, it were advisable to choose a dry season, and the greatest care must be observed in lifting the roots, to prevent them bleeding at the wounds which they may have received. Some dry sand should be procured, and the roots placed in it, in some shed or cellar beyond the influence of the frost. It is the practice of some persons to let the beets remain in the ground, and in this case, they should be covered, before the winter sets in, with litter or reeds, or peas or beans haulm. By this method, however, they are not only likely to rot, but also to lose their color from the influence of the rain. When the tops are dressed, the crown of the roots should be left about an inch long to prevent their bleeding.

TRANSPLANTING CABBAGE-PLANTS.

Towards the end of this month is a proper time for planting out early cabbage-plants, where they are to remain for cabbaging early in the following summer.

A spot of good ground should be chosen for them, over which some rotten dung should be spread before it be dug; then dig the ground one spade deep, burying the dung regularly in the bottom of the trenches.

If time can be spared, we would advise to trench the ground for this crop. As a considerable portion of every garden is taken up with cabbages planted at this time, or early in spring, we would recommend to commence at one end of a quarter, or division of the garden, and to trench the ground for this crop, forming the surface into ridges, and as the operation proceeds, trenching to the depth of two feet or two and a half, according to circumstances. Give plenty of manure, and let it be regularly laid in the trenches, as the operator proceeds. When one trench is finished, set the plants in the bottom, or lowest part of the ridge, and in wet soils, a row may be planted on the top of the ridge. If both survive the winter, either may be removed to make up blanks in the whole, or removed to another piece of ground, preferring to leave the row in the lowest part of the ridge. When this first row is planted, proceed with another trench, which ridge up in the same manner, and plant the second row of plants, and so on until the whole piece intended be trenched and planted. By this means, the whole garden will be regularly trenched, and when the whole ground has been gone over in this manner, begin again, where the first operation commenced. In old gardens, when the soil has been long cropped with the brassica tribe, this is almost a certain cure for that disease, occasioned by grubs, and generally called, *clubbing*. The plants will be protected from cutting winds, and grown in a fresh soil; the eggs of the grubs will be buried, probably, beyond the possibility of their again visiting the surface, at least for some time. If this, or a similar rotation, were more generally adopted, less injury would be done by these and other insects. The various varieties of brassica would then follow in crops of regular rotation, as they seldom succeed, if planted twice on the same ground.

The plants should be set in rows about two feet apart, allowing about the same space between the rows, which is sufficient room for this early plantation.

Some of the early cabbage-plants should, however, remain in the nursery-beds till January or February, when they are to be planted out permanently, for it frequently happens, in severe winters, that many of those plants, which are set out early in a more open exposure, are destroyed by the frosts; should this take place, then have recourse to the nursery-beds to supply their places.

If any cabbage-plants still remain on the seed-bed, remove them into nursery-beds about the beginning of the month, in order that they may gain sufficient strength to endure the ensuing frosts.

WINTER SPINACH.

If, at this season, the spinach-beds be not kept exceedingly free from weeds, they will soon outgrow the plants and totally choak their growth. The better plan at this season is to clean them by the hand, because they are now principally covered with running weeds, such as chick-weed, &c.

If the spinach were omitted to be thinned out last month, it should be done, as soon as possible, the beginning of the present, always clearing away the worst of the plants, and leaving the remainder about five inches apart.

EARTHING UP BROCCOLI AND BRUSSELS-SPROUTS.

The crops of broccoli should now be cleared from weeds; and finally moulded up for winter about the middle or latter end of the month; a dry day should be chosen for the operation. The crops of Brussels-sprouts may be treated in the same manner.

DRESSING ASPARAGUS BEDS.

Some time in this month cut down the stalks of asparagus and dress the beds. The stalks should be cut down quite close to the surface of the beds, after which the weeds should be hoed clean away, and drawn into the alleys. Having then stretched a line, mark out the alleys with a spade about twenty inches or two feet wide, according to the original width which was allowed them.

Then proceed to dig the alleys about a spade deep, spreading the greater part of the earth over the beds in a neat and regular manner; and accordingly as you dig the alleys, bury the weeds regularly in the bottom of the trench, covering them with a sufficient quantity of earth. The edges of the beds should be formed full and straight, and the bottoms of the trenches be made level and smooth.

If it be intended to manure the beds at this time, let a sufficient quantity of rotten dung and fresh rich loamy earth be prepared, by being well mixed and incorporated, with which to top-dress the beds, and which should be laid on them to the thickness of two inches, and over this should be laid an inch in thickness over the beds, of mould taken from the alleys between them.

Or a quantity of good rotten dung may be procured, such as is taken from old cucumber or melon-beds, and this should be spread over the asparagus-beds, as soon as the stems and weeds are cleared away. The dung should be well broken and laid on of an equal thickness, after which dig the alleys, and lay a small quantity of the earth over the dung.

The beds being thus prepared, plant in each alley a row of colewort or cabbage-plants, at about eight or nine inches apart in the rows. These plants often survive the winter in the severest frosts, when all those have been destroyed which were planted on a level spot. If it be preferred, a row of early garden-beans may be planted in each alley.

ASPARAGUS FOR FORCING.

Asparagus-plants which are intended for forcing, should also now be cut down, the weeds drawn into the alleys as directed before; bury the weeds, and as you proceed throw a little mould over the beds.

Those plants, however, which are intended for forcing this winter, need only have the stalks cut away, and covered with leaves or long dry litter, to enable them to be taken up in time of frost.

SEEDLING ASPARAGUS.

Seedling asparagus-plants, which were sown last spring, should at this time also have a little top-dressing, such as clearing the bed from weeds, laying a little rotten dung over it, &c.

EARTHING UP CARDOONS.

This work must be done in dry weather, and at a time when the leaves of the plants are dry.

Observe at every time that these plants are earthed up, to tie the leaves together with a hayband, then, breaking the earth well, lay it up the sides at an equal thickness about the plants.

EARTHING UP CELERY.

As it advances in height, celery should be constantly earthed up, that the plants may be well blanched before the hard frosts come on. In dry days, therefore, proceed to this work, breaking the earth well first, and then laying it carefully up to the sides of the plants, without burying their hearts.

LIFTING AND STORING SALSAFY, SCORZONERA, AND SKIRRET.

These herbs may now be lifted and stored for winter use, in the same manner as directed for carrot.

SOWING SMALL SALADING.

Chervil and cresses may still be sown. The sooner now, however, the better, that they may get established before the winter sets in.

At the bottom of a south wall, sow a supply of Normandy or curled cress; it will, with little protection, afford a fine salad during the winter, and come in early in spring.

SOWING RADISH.

Sow some of the different sorts of radish in a sheltered situation. They may perhaps come in about Christmas, and if they do, will be useful. If they should fail, the value of the seed is trifling.

WORK TO BE DONE IN THE CULINARY GARDEN.

All vacant pieces of ground should now be either trenched or dug deep, leaving the surface as rough as possible, or ridged up in long narrow ridges, so that the frost may penetrate through it. This operation of winter fallowing, either by trenching, digging, or ridging, is of infinitely more importance to garden-ground than all the manures that can be given it without.

Clear away all decayed leaves, and dig them into the ground or carry them to the compost-yard for vegetable mould. If a garden be thus laid up in fallow, it will have a neat and orderly appearance all winter, and will be contemplated with more pleasure by its owner than if left in that state of neglected confusion, in which we generally see kitchen-gardens at this season. It will be a saving of labour to the gardener in spring, as well as materially improving the soil. In strong clayey wet soils, this is of the utmost importance, and few gardens are so light and sandy as to be injured by it.

Heaps of different sorts of compost for manure should be turned over, and properly mixed, but this should be done in dry weather. Draw in fresh loam, turf, and other such like matter, to incorporate with dung, and be not sparing in collecting such materials. Composts thus prepared are always better than rank dung; too much, therefore, cannot be collected, and no season of the year is better adapted for that business than the present.

NOVEMBER.

PLANTING BEANS.

Beans for early spring crops should now be planted, for which; see *last month.*

Any of the early kinds of beans, the mazagan in particular, may be sown thickly in a bed, (*as directed last month,*) and occasionally protected. They will be fit to transplant out where they are to perfect their crop in spring.

SOWING PEAS.

This is a good season for sowing peas. Those sown this month will be equally early with those sown last month; it is, however, best to sow at both times. (See *last month.*)

COVERING UP ARTICHOKES.

Artichokes should now be covered up, before the winter sets in, with peas-haulm or stable litter, as they are very liable to be injured, if not totally destroyed by severe frost. The decayed stalks must be first cleared away, and also the bulk of the leaves. The litter must be laid along the rows, sufficiently broad to cover the roots, according to the size of the stools, and about the thickness of a foot, and it should be trodden or beaten well down with the fork to prevent it being blown about.

Leaves of trees, which will now be in abundance, make a good covering, but are apt to blow about with the wind. As a preventive, however, cover first with leaves, and then add a little litter upon the top, and for greater security a little mould may be put over all. The best covering for artichokes is rotten tan, when no longer useful for fermentation.

TAKING UP CARROTS, PARSNEPS, BEETS, &c.

See *last month.*

SAVING TURNIP SEED.

When it is intended to plant turnips for seed, some of the best formed roots should now be selected. They should be planted deep, in rows two feet apart, and at a distance from any other plants of the same family, to prevent, as much as possible, the hybridizing of them with the pollen of other kinds.

SAVING CARROT SEED.

The largest and best-formed roots, free from canker or worm, should be made choice of, and at this time planted in rows two feet apart, and planted deep, so that their crowns may be at least two or three inches under ground. In gathering the seeds, prefer such as are produced from the central or principal *umbel,* from which may be expected the finest seed, and the strongest plants.

SPINACH.

Beds of spinach should now be kept perfectly clean and free from weeds; and if the plants stand too closely together, draw up the smallest of them for present use, thinning them in such a manner as that each plant may stand singly.

If this be done, and in proper time, the sun and air will penetrate more easily amongst them, and will dry the surface of the earth, which is of great advantage to the plants, and will cause them to grow and thrive the better.

In gathering spinach, the following directions should be attended to, viz. to cut off only the outside larger leaves, permitting the others to remain, which by that means will grow the faster, and be fit for gathering in succession.

COVERING UP CELERY.

The crops of celery, particularly the most forward, should be earthed up as far as may be judged necessary, and a quantity of fern, or long littery dung, brought to the sides of the beds to be ready on the appearance of frost wherewith to cover the whole of them. They should be covered to the thickness of a foot or fifteen inches, but this covering should be always taken off, as soon as the frost is gone. By attending to this particular, celery may be preserved throughout the winter.

CAULIFLOWER-PLANTS.

The cauliflower-plants which are in frames should have free air admitted to them every fine day, by wholly removing the glasses in the morning, but at the approach of night, they should be again regularly covered.

When the weather is very wet, it will be proper to keep the plants covered with the glasses, but, at the same time, to raise them to such a height, as to admit the air to have free circulation over the whole of the bed.

Take way all dead leaves as soon as they appear on the plants, and keep them entirely clean from every species of weeds.

The cauliflowers under bell or hand-glasses, require just the same treatment as those in frames. It will be also of essential service to them to draw the earth up a little round their stalks.

Where cauliflower plants were neglected to be pricked out last month, let it now be done as early in this month as possible.

COVERING UP ASPARAGUS.

Asparagus, being indigenous to many of our sea-shores, is not so tender, as to require protection in winter. It is seldom, or never, that asparagus-roots are injured by frost. The practice of covering asparagus seems to be mistaken by many. The real use of covering it in winter is, not so much to protect its roots, as to manure the ground. For this purpose, therefore, good dung should be used, and not mere litter, or leaves, which is the practice of some persons. Previously to laying on the dung, the surface should be carefully forked up a few inches deep to allow the juices of the dung to penetrate more readily to the roots. Asparagus-roots yield a great bulk of vegetable matter in the course of the season, therefore this must exhaust the ground on which it grows; and, being a perennial plant, not often renewed by sowing, or planting, it requires a proportional quantity of good manure to support it. Salt is a good manure for asparagus, the subtile particles of which penetrate to a great depth. This should, however, be used with discretion.

Good stable-dung, which has not been exhausted in hot-beds, should be chosen, and put on in quantity according to its quality, from six to twelve inches. The rains, in winter, will wash the juices of the dung down to the roots. Where sea-weed can be procured, it is probably the best manure for asparagus; but where that cannot be got, salt may be used mixed with the dung: its parts will descend more gradually along with the juices of the dung, than when applied as a simple.

COVERING UP SEA-KALE.

The beds of young sea-kale, that are not intended to be forced, should be covered up as before directed for asparagus. Observing, first, to clear the ground of weeds, and to fork up the surface.

The beds intended for cutting in spring should be also forked up, and cleared of weeds, and covered from five to fifteen inches with leaves, which will now be in abundance; covering the strong and old roots thicker than the young and weak ones. A few branches, or old boards, may be laid over the whole, to prevent the leaves being blown away, and they will require no farther attention till spring, when they will be fit for cutting.

The beds of sea-kale intended for forcing, should also be forked up and covered with leaves, sufficiently thick to keep the frost out, and to render them more easily got at, when the operation of forcing is to commence: for which, see *Forcing Garden.*

CARDOONS.

Cardoons should now be finally earthed up, and protected as is advised for celery.

PLANTING LATE CROPS OF CABBAGES.

The planting of cabbages for next spring's use should now be completed as early in the month as possible, that they may become rooted before the growing season ceases. The best plants should be chosen for this purpose. The worst may remain in the seed-bed, and take their chance; if they survive the winter, they will be useful to make up vacancies in the crops planted out.

WINTER ONIONS.

The crops of onions sown to stand the winter should be kept clear of weeds. In dry weather, the ground between the rows should be hoed; and, if wet, the weeds should be hand-picked; as the onions increase in size, they may be thinned out for salads.

CARE OF WINTER SALADS, &c.

The crops of chervil, cresses, endive, parsley, and radishes, sown and planted as directed in the two last preceding months, should, in the prospect of severe weather, be protected with care; by covering them with branches of spruce or broom, and in very severe weather with mats. The most sure method is to have a supply in the forcing department, (*which see,*) particularly of the smaller sorts.

LETTUCE.

Lettuce-plants, which are under frames, should enjoy the free air daily, when the weather is mild and dry; the glasses should entirely be taken way in the morning; when the weather is wet or very cold, set them on again in the evening, but at other times they may remain off all night; when these plants are kept too close, they are apt to draw up weak.

In very wet weather, keep the glasses on, only raising them at the back of the frame, that the air may have a free course and be duly admitted to the plants.

When the weather is severe and frosty, the glasses may be kept close; other coverings also, if necessary by the extreme rigour of the season, must be made use of.

Where any of these plants have been placed under bell or hand-glasses, observe the same directions as before mentioned.

WORK TO BE DONE IN THE CULINARY GARDEN.

When the weather is dry, and time to spare, let such pieces of ground be trenched as require it: all other spare ground should now be rough-dug or ridged up to the action of the winter. Such crops as require to be protected during winter, should now be attended to. All rubbish and useless vegetables removed from the garden. Moulds, composts, and manures should now be collected, and mixed to be in readiness for the ensuing spring.

Roots of all kinds, intended to be preserved for winter use, should now be taken up and housed as directed in the last and former months, as after this time they will not increase in size, and some of them will be injured by remaining in the ground, particularly beet-root, which loses its colour; and carrots, which are apt to be attacked by worms when left too long in the ground; they are also more conveniently obtained when wanted for use, if packed in sand, straw, or otherwise, and are not injured by frost, which not only detracts from their flavour, but renders them less likely to keep for any length of time. Attention should now be paid to neatness and order as well as during the former months. The walks in and connected with the culinary garden, should be kept neat and clean, and in dry days they should be frequently rolled, to keep the surface even and agreeable to walk upon, as well as to keep down the worm-casts, which at this season are very troublesome, and if not swept off, and the walks afterwards rolled, give them a coarse and neglected appearance.

DECEMBER.

PLANTING BEANS.

If the weather will permit, plant beans as directed last month, but if the ground be not dry, defer this planting, till next month or until February.

SOWING PEAS.

Peas may be sown as directed last month, if the weather be mild and dry; if not, defer till next month. Look carefully over the crops of beans and peas already sown, and when mice or other vermin attack them, let them be destroyed by poison or traps. If this be neglected, they will soon destroy all the crops. Furze, or *Ulex europeus*, chopped small, and strewed over the peas in the drills, is often used to prevent the attacks of mice. The crops of beans and peas that may be above ground should be carefully examined in dry days, and the earth stirred about their stems, and a little drawn up to them, if necessary.

Unless in very severe frosts, avoid covering peas or beans this month with the pea hand-glass, or other means, as that would draw them up too tender, and render them less able to stand the frosts, which generally are more severe, particularly of late years, in January and February. Glass-cases are intended more to accelerate, than protect the crops. Hurdles may be placed upright parallel to the rows; or pea-stakes may be put along the rows, which will partially protect them, without drawing them up too tender. In wet soils, a slight covering of coal-ashes will resist the damp, and not injure the crop, if not applied in too large a quantity. Where chalk can be had, a slight covering of it will greatly prevent the effects of damp, it corrects the acidity of the ground, and imbibes a great portion of moisture.

Mice are the greatest enemies that the gardener has to contend with in the rearing of early crops of beans or peas. Rats, although more formidable, are not so generally found to destroy seed in the ground. The best modes of destroying mice, are certainly to have a few cats domiciliated in the back shades; they will keep a garden clear of these invaders. The next is, a slate or a brick supported by a combination of three slips of wood, forming the figure 4, and baited with a pea or bean, a piece of bacon or cheese; or, a brick may be used, by placing two pieces of wood in the ground, about five inches apart, each slit at the top, through which slits a stout thread is drawn, and a bean or pea fixed to the middle of the thread; the brick is placed, resting one end on the ground, and the other on the thread: the mouse, in attempting to take away the bean, cuts the thread, and the brick falls down upon it. This is, of all traps, the simplest, and soonest set. Several hundred of these traps should be set in different parts of the garden, particularly where mice are found to resort to. By looking over them once or twice a-week, and re-setting any that may have fallen, the garden will be kept pretty clear of these vermin. Rats are generally destroyed by poison, and most gentlemen have a person employed by the year to destroy them. But, in all large places, one of the stationary labourers should be instructed in destroying vermin of all sorts, and be paid either by the year, or so much per head for moles, rats, mice, and all birds or beasts, that destroy the fruits of the earth. This would be found the most economical and satisfactory way of getting rid of such enemies.

MUSHROOMS.

Be very careful now of mushroom-beds, to shelter them from the wet and sharp frosts. Lay a covering of clean straw, a foot or a foot and a half in thickness, over every bed; this will generally produce the desired effect. Dutch reed-mats are the best covering for mushroom-beds, and, if taken care of, will last for many years: these should be placed over the straw, and will be found completely to throw off the wet.

After heavy rains or snow, examine the beds; and if the covering next the beds be wet, remove it, and place in its stead the same quantity of fresh straw.

PROTECTING-FRAME DEPARTMENT.

Look carefully over the cauliflower, lettuce, cape broccoli, radishes, and salading of every description, that are under frames, hand-glasses, or other shelters. Remove all decayed leaves, weeds, or other rubbish from them; give plenty of fresh air in fine days, by removing the glasses, either wholly or partially, as circumstances may direct, and cover them from rains, snow, or frost, by adding a covering of litter, bass-mats, or reed-mats, as may be most convenient.

PROTECTING CULINARY VEGETABLES.

Protect celery and cardoons as directed in November, and lay some long littery dung over the roots of rhubarb, sea-kale, and asparagus, intended to be taken up to force in the forcing department. Protect endive in the borders by branches of trees, or in severe weather, by straw or reed-mats; also radishes and other salads, in the open borders, and crops of carrots for spring use. Parsley, and every other production of the garden that are likely to be destroyed by frost, should also be protected.

WORK TO BE DONE IN THE CULINARY GARDEN.

The operations of trenching, digging, and ridging, should be continued, if dry weather, if not, it were advisable to find employment for the men in some other department. Deciduous hedges may now be cut; any fences connected with the garden put in repair, if necessary. The onions and other roots stored, should be occasionally examined in bad weather, and all that show symptoms of decay, removed, before they contaminate the remainder. If frosty weather, wheel out manures of all sorts, and lay them in neat heaps in different quarters of the garden; it will save much time in the spring, when they are to be dug in; but, in doing this, by no means divide the manure in small heaps of a wheelbarrow-load each: this is the next thing to wheeling it into a river. Let each heap contain as much manure as is supposed will be sufficient for the quarter, on which it is placed; put it neatly up, and cover it with a thin coat of mould, to prevent as little of its goodness escaping as possible.

ICE-HOUSE.

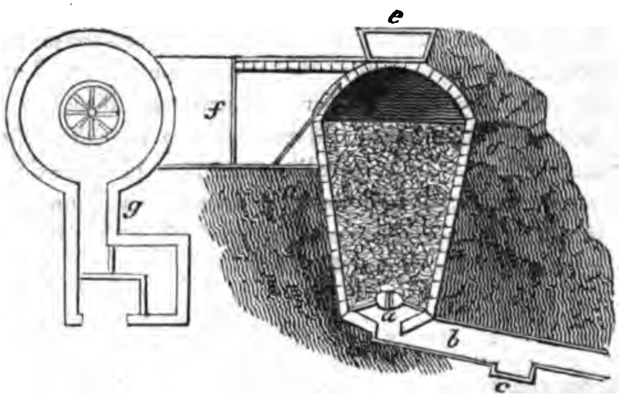
This is the season in which to expect materials to fill the *ice-house;* have it properly cleared out of all straw, or other filth, that may have accumulated in it; have beaters and rammers prepared for packing it, when either snow or ice is found in sufficient quantity to fill it. If the ice-house be built on a proper principle, either the one or the other will answer equally well. Snow, in fact, very much resembles ice, when well beaten in the house, and can only be considered in the character of ice. It answers all the purposes of ice in domestic cookery or confectionery, besides having this advantage over ice, that it is sooner collected, and packed in the house with less labour, and keeps equally well.

ICE-HOUSE AND ITS MANAGEMENT.

Ice, in the hot days of summer, is considered such a luxury, that few that can command it would like to be without. The situation for an ice-house should be chosen on a dry and rather elevated spot of gravelly or chalky ground, and as near to a pond or piece of water as circumstances will admit of. If the situation be shaded by more elevated ground, so much the better, but if it be not naturally so, it may be rendered artificially so by planting. It must be, as much as possible, hidden

from the sun's rays. The form of our ice-houses is generally that of an inverted cone. The London confectioners, as well as most people on the continent, content themselves with keeping it in cellars, surrounded with very thick walls, and without windows, being entered sometimes by straight and sometimes by crooked passages, secured by double and often by treble doors, and the ice thickly covered with straw or mats.

The accompanying figure will give an idea of the general plan of ice-houses in this country.



In building the ice-house, a space of two feet or more should be left at the bottom (*a*), for receiving any moisture which may drain from the ice in the process of melting; from this space, a drain of brick-work (*b*), set in cement, the dimensions of which, however, need not be so large as represented in the accompanying sketch, and which is intended to carry the moisture to a considerable distance; this drain should have a stop or trap for the exclusion of air (*c*), and over the space at the bottom (*a*) should be placed a strong grating of wood, to let the moisture fall down, which may at any time proceed from the melting of the ice. The sides of the well (*d d*) must be walled up with brick or stone, at least two feet thick, or the wall may be built hollow. When the proper height is attained, the well may be arched over with two arches, with a vacuity between, and leaving in the centre a hole, for the admission of the ice (*e*); and in the sides, a door for taking it out (*f*). This door, the better to exclude the air, should open into a porch (*g*) with the three other doors, the spaces between which should be filled with straw, to exclude more effectually the heat of the atmosphere. The whole being covered first with a covering of tempered clay, and next with a hill of earth. The appearance will not be disagreeable, as it may be planted with evergreens.

The exterior may be so decorated, as to become an object of ornament, should it be placed in any part of the dressed grounds.

The size of the house must depend on the quantity of ice which is wanted; but we would recommend, that, in making an ice-house, rather to make it too large than too small, as it sometimes happens that neither ice nor snow can be procured to fill it. Instances have occurred, that the London confectioners have had to import it from the polar seas. As snow or ice will keep, in a good ice-house, two and sometimes three years, it were advisable to have it large enough, and always to fill it when an opportunity offers, to guard against a casual scarcity. For an ordinary-sized family, a house about ten feet in diameter, and fifteen feet deep, will be sufficient; for larger families the house must be larger, or for smaller families, a well of six feet in diameter, and ten deep, may be sufficient.

FILLING THE HOUSE.

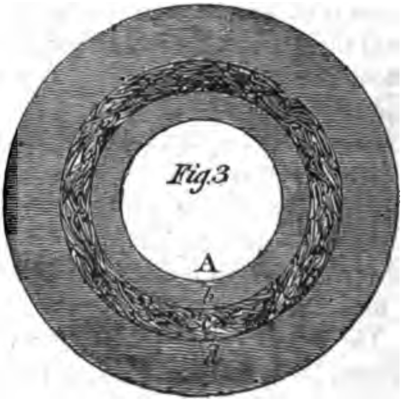
When either snow or ice can be got, begin by laying a good coat of straw on the bottom, and up part of the sides; if snow, throw it in, and let it be well beaten together, and so proceed, until the house be full. If ice, prefer the thinnest (that is, about an inch thick); break it as finely as possible, with clubs and mallets at the entrance; put it also in, and let two or three men be employed in the house, packing and beating it closely together with rammers. As the operation proceeds, sprinkle occasionally a little water over the whole, which will make it freeze together in a solid body. The whole art of keeping ice simply consists in packing it closely, and defending it from the action of atmospheric air.

The house being full, let the doors be shut up, and the spaces between each packed full of straw. For security, have the outer door locked, and the joints between the door and casement painted over with a thick coat of coarse paint, or strong lime-wash. It will be unnecessary to disturb it afterwards, until opened to take out the ice; care must be taken, every time that any be taken out, to have the doors all shut, and the spaces filled up again with the straw. It should be taken out as expeditiously as possible, and one person should carry the ice to the kitchen, or wine cellar, while another renders the house secure again.

When we consider the rapid progress which science is making, it is not improbable that a substitute may be found, grounded upon chemical principles, to answer all the purposes of ice in domestic cookery. An apothecary of Caen, in Normandy, is asserted to have discovered a method of procuring ice at all seasons of the year, by mixing four pounds of sulphuric acid (oil of vitriol) 36 degrees, with five pounds of sulphate of soda (Glauber salts in powder). This mixture must be made in an earthenware or china vessel, and the water which it is intended to congeal must be put in it, in a separate vessel, wrapped round with flannel, cotton, thick paper, or some other non-conductor of heat, and the operation must be repeated three times on the same body of water.

Some people put salt with the ice as the house is filling, but this is quite unnecessary; it will consolidate as well without it as with it.

TO KEEP ICE IN STACKS.



For those who have not the convenience of an ice-house, and yet are desirous of having ice at times, the following plan will be found to answer, and would be a great improvement to the shooting boxes or summer retreats of gentlemen, and could be obtained at a trifling expense. Prepare a circular elevated platform (A) about a foot above the level of the ground upon which pile the ice or snow in a conical form, during a hard frost, and add a little water, as the building goes on. Over this cone, wheaten or other straw is laid to the thickness of twelve or fifteen inches (*b*), over this a stratum of fagot-wood or heath (*c*), and then another stratum of straw of any sort (*d*); let this outer coat be of a good thickness, and well secured down with straw-ropes, similar to the way of securing thatch on wheat or hay-stacks; over the whole a coat of turf may be put. In this simple way, ice will keep all the summer well. Expose it to the air as short a time as possible, when any of the ice is taking out for use.

The use of ice has been long known among the nations of Europe. Daines Barrington says, that the Romans discovered the use of ice for cooling liquors at the time when they began to force fruits, and adds, as a singular coincidence, the coeval invention of these arts in England. He says, that Charles the Second had the first ice-house, and also the first hot-houses, ever built in this country. At the installation-dinner, given at Windsor, on the twenty-third of April, 1667, there were cherries, strawberries, and ice-creams. But Switzer thinks, that the uses of ice must have long before been introduced from the continent.

Various have been the methods adopted by gardeners for the preparation and keeping of ice during the hot months of summer, the complaint being general, that it melts away too rapidly; to obviate this defect, Mr. Young, of Wilford House, near Nottingham, has, in the Gardeners' Magazine, recommended the following method:—

In the months of December or January, when the water-pools are frozen to a sufficient thickness, say one or two inches, proceed to break the ice in pieces, and draw it off the water with iron hooks, conveying it to the ice-house in carts, as quickly as possible. Before throwing it into the house, three or four men should be employed to break it in small pieces, about the size of common road-metal. Then carry it into the house, where two men should be again employed in pounding it almost to powder. Lay the bottom and the sides of the house with a layer of wheat-straw, three or four inches thick. After there are about two feet of ice thus pounded, take ten pounds of salt, and dissolve it in ten gallons of boiling water. When the salt is sufficiently dissolved, pour it on the ice through a common garden watering-pot; thus going on regularly every two feet, watering, and laying the sides with straw till the house is filled, finishing with a double quantity of the salt water. After it has been in eight days, and when it has subsided, fill up closely with small bundles of straw, to exclude all air as far as possible.

An ice-house filled in this manner will be found, when opened in summer, to be as firm as rock, and to require at all times the force of a pick-axe to break it up. It will be found to keep three times longer than the common method of filling ice-houses, and more suitable for being received from the ice-house for use, as it will keep three times longer when exposed to the air.

It appears, however, from a communication inserted in the same periodical, from Mr. Saunders, Gardener at Luscombe, in Devonshire, that a regular and plentiful supply of ice may be obtained without the aid of salt. The following is the method which he adopts:—As soon as the ice is frozen to a proper thickness, it is conveyed to the ice-house, where a sufficient number of men are ready to proceed to break it in small pieces; then they throw it into the house, where three or four men more are employed pounding it, till a sufficient quantity of powder is obtained to prevent any part of it being hollow. In this manner I proceed till the house and entrance, or passage to the house, is completely filled. The ice which the passage contains, furnishes a supply for six or eight weeks; at the expiration of which time the house is opened, and a quantity of straw taken into it, sufficient to fill the cavity that will then be found between the ice and the wall, and also to lie one bundle thick over the top of the ice.

THE
PRODUCTIONS
OF THE
CULINARY GARDEN
FOR THE YEAR.

JANUARY.

Cabbages of sorts (*if a mild winter*)
Savoys
Borecoles
Brussels-sprouts
Kidney or French beans for harricots, from the seed-room
Peas for soups, from do.
Potatoes
Jerusalem Artichokes
Turnips
Carrots
Parsneps
Red Beet
Skirret
Salsafy
Scorzonera
Marjoram, dried
Savory, do.
Mint, do.
Basil, do.
Anise seed
Coriander do.
Caraway do.
Mushrooms
Turnip-rooted celery
Spinach (*in mild seasons*)
Sorrel (*in do.*)
White Beet (*in do.*)
Onions
Leeks
Garlic
Eschalot
Rocambole
Lettuce
Endive
Celery
American Cress
Winter do.
Parsley, (*if protected*)
Horse-radish
Fennel, dried
Dill, do.
Chervil, do.
Thyme, green or dried
Sage, do.
Rosemary, do.
Lavender, do.
Camomile, dried
Samphire (*seldom cultivated*)
Red Cabbage

FEBRUARY.

Cabbage of sorts (*if a mild winter*)
Savoys
Borecoles
Brussels-sprouts
Cabbage-Coleworts (*if a mild winter*)
Broccolis
French or Kidney Beans for harricots
Peas for soups, from the seed-room
Potatoes
Jerusalem Artichokes
Turnips
Carrots
Parsneps
Red Beet
Skirret
Salsafy
Scorzonera
Marjoram, dried

Basil, dried
Anise seed
Coriander do.
Caraway do.
Spinach (*if a mild winter*)
Onions
Leeks
Garlic
Eschalot
Rocambole
Lettuce
Endive
Celery
American Cress
Winter do.
Parsley (*if a mild winter*)
Horse-radish
Fennel, dried
Dill, do.
Chervil, do.
Thyme, green or dried
Sage, do.
Rosemary, do.
Camomile, dried flowers of
Mushrooms
Red cabbage

MARCH.

Brussels-sprouts
Borecoles
Broccolis
French Beans, for harricots, from the seed-room
Peas for soups, do.
Potatoes
Jerusalem Artichokes
Onions
Welsh onions, from the open ground
Lettuce
Endive
Celery
Parsley
Horse-radish
Fennel, dried
Dill, do.
Chervil, do.
Marjoram, do.
Basil, do.
Mint, do.
Savory, dried
Turnips
Carrots
Red Beet
Parsneps
Skirret
Scorsonera
Spinach (*if mild weather*)
Garlic
Eschalot
Rocambole
American Cress
Winter Cress
Water Cress
Burnet
Thyme
Sage
Rosemary
Anise seed
Coriander do.
Caraway do.

APRIL.

Brussels-sprouts
Borecoles
Broccolis
Coleworts
French Beans, for harricots, from the seed-room
Peas for soups, do.
Spinach
Sorrel
Onions, from the stores
Young do. for salads
Welsh Onions
American Cress
Winter Cress
Burnet
Water Cres
Parsley
Taragon
Angelica
Mushrooms
Potatoes
Jerusalem Artichokes
Yellow Turnip
Carrots
Parsneps
Red Beet

Skirret
Scorzonera
Salsafy
Garlic
Eschalots
Rocambole
Lettuce
Endive
Celery
Horse-radish
Thyme
Mint
Sage
Rosemary
Tansey

MAY.

Early Cabbage
Cauliflowers
Broccolis
Coleworts
Young Peas, though rarely, at the end of the month
Potatoes
Jerusalem Artichokes
Turnips
Carrots
Red Beet
Lettuce
Endive
Celery
Succory
Taragon
Thyme
Sage
Mint
Morels, from their native habitats
Mushrooms, from beds
Young Radishes
Spinach
Sorrel
Onions, from the stores
Onions, young, for salads
Leeks
Welsh Onions
Chives
Garlic
Eschalots
Asparagus }
Sea-kale } in perfection
Salads of all kinds in perfection
Parsley
Purslane
Horse-radish
Tansey
Costmary
Rhubarb, blanched or otherwise
Angelica
Anise

JUNE

Cabbage }
Cauliflowers } in perfection
Kidney-beans
Peas
Garden-beans
Old Potatoes, from the stores
New Potatoes
Asparagus }
Sea-kale } till the middle of the month
Lettuce
Parsley
Fennel
Dill
Marygold
Rhubarb
Angelica
Morels, from their natural habitats
Turnips
Carrots
Radishes
Spinach
Sorrel
Chives
Young Onions
Rocambole }
Garlic } from the stores
Small Salads
Purslane
Taragon
Horse-radish
Thyme
Sage
Mint
Savory
Basil
Mushrooms, from beds in the open air.

JULY.

Cabbbage }
Cauliflowers }
Peas } in perfection
Beans }
Kidney-beans }
Spinach
Sorrel
White-beet
Small Salads
Lettuce
Radishes
Indian-cress
Marygold
Borage
Fennel
Angelica Stalks
Gourds
All Pot-herbs and Salads in perfection
Mushrooms, from ridges
New Potatoes
Turnips
Carrots
Radishes
Onions, bulbed
Onions, young, for Salading
Artichokes
Alisanders
Rampion
Parsley
Purslane
Thyme
Sage
Mint
Balm, and all other herbs
Radish-Pods } for pickling
Cucumbers }
Morels, from their native habitats

AUGUST

Cabbage
Cauliflowers
Broccolis
Peas
Beans
Kidney-beans
Spinach
White-beet, for *chard*
Sorrel
Artichoke
Cardoon
Rampion
Parsley
Purslane
Indian-cress
Marygold
Caraway } seeds
Anise }
Gourds, of all sorts
Love-apples
Egg-plant
Capsicum
Truffles, from woods
Potatoes
Turnips
Carrots
Radishes
Jerusalem Artichokes (seldom used at this season)
Red Beet
Onions, bulbed
Do. small, for salad
Eschalots
Garlic
Rocambole
Small Salads
Lettuce
Endive
Radishes
Borage
Fennel
Thyme
Sage
Mint
Balm, and all other herbs, green or dry
Radish Pods } for pickling
Cucumbers }
Mushrooms, from garden-beds and fields
Champignons, from open pastures.

SEPTEMBER.

Cabbage
Cauliflower
Broccolis
Peas
Beans
Kidney-beans
Onions
Eschalots
Garlic
Rocambole
Leeks
Small Salads
Endive
Lettuce
Celery
Fennel
Chervil
Gourds and Pumpkins
Love-apple
Capsicum
Egg-plant
Mushrooms, from beds and fields
Truffles, from woods
Morels, from their natural habitats

Potatoes
Turnips
Carrots
Parsneps
Skirret, and all other roots
Spinach
White Beet, for *chard*
Sorrel
Artichokes
Cardoons
Rampion
Taragon
Parsley
Horse-radish
Indian-cress
Marygold
Thyme
Sage
Mint, and all other herbs
Red Cabbage
Radish Pods } for pickling
Cucumbers
Champignons, and all the eatable Fungi, in perfection.

OCTOBER

Cabbages
Cauliflowers
Broccolis
Potatoes
Turnips
Jerusalem Artichokes
Red Beet
Spinach
White Beet, for *chard*
Leeks
Garlic
Eschalots
Rocambole
Winter-cress
Burnet
Indian-cress
Marygold
Gourds
Pumpkins
Love-apple

Beans
Kidney-beans, (*if favourable weather*)
Carrots
Radishes, of all sorts
Skirret
Salsafy
Scorzonera
Sorrel
Onions
Celery
Small Salads
Endive
Lettuce
Saccory
Parsley
Horse-radish
Fennel
Thyme
Sage
Mint, and all other herbs

Capsicum
Egg-plant
Mushrooms
Peas
Red Cabbage
Radish Pods } for pickling
Cucumbers
Many of the eatable Fungi (*if mild weather.*)

NOVEMBER.

Cabbages
Cauliflowers (now protected)
Broccolis
Brussels-Sprouts
Winter-radish
Jerusalem Artichokes
Red Beet
White Beet, for *chard*
Sorrel
Rocambole
Cardoons
Rampion
Endive
Lettuce
Winter-cress
Burnet
Thyme
Sage
Rosemary
Savoys
Borecoles
Potatoes
Turnips
Carrots
Skirret
Salsafy
Scorzonera
Spinach
Onions
Leeks
Garlic
Eschalots
Celery
Parsley
Horse-radish
Fennel
Chervil, dried
Caraway } seeds
Anise
The edible roots, as in last month.

DECEMBER.

Cabbages
Cauliflowers (when protected or preserved)
Broccolis
Savoys
Winter-radish
Jerusalem Artichokes
Red Beet
White Beet, for *chard*, when protected
Eschalots
Rocambole
Cardoons
Winter-cress
American do.
Thyme
Sage
Rosemary
Brussels-Sprouts
Borecole
Potatoes
Turnips
Carrots
Scorzonera
Salsafy
Skirrets
Onions
Leeks
Garlic
Celery
Endive
Lettuce
Parsley
Horse-radish.

SYSTEMATIC CATALOGUE

OF

CULINARY SEEDS,

COMPRISING THEIR VARIOUS SPECIES, AND THE PRINCIPAL VARIETIES WHICH ARE IN GENERAL CULTIVATION; THEIR NATIVE PLACE OF GROWTH, IF INDIGENOUS; AND IF EXOTIC, THE TIME OF THEIR INTRODUCTION.

Alexanders, or **Alisanders**,—*Smyrnium olusatrum*, (*Linnæus*)—belongs to the class and order *Pentandria Digynia*, and ranks in the natural order of *Umbelliferæ*. The alisander is a native of Britain, grows naturally near the sea, and is often to be observed naturalized, near old buildings. It was in more general use many years ago, than it is at present, and was much cultivated before the use of celery became so general. It is used as a culinary plant when blanched, and is of a warm aromatic quality. There is only one variety cultivated.

Asparagus,—*Asparagus officinalis*, (*Linn.*) — belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Asphodelaæ*. Asparagus is a native of Britain, and is found on gravelly situations near the sea, as for instance in the vicinity of Bristol, in the isle of Portland, and Seaton Links, near Edinburgh. It is common on the shores of the north of Europe, and many of the *steppes* in the south of Russia and Poland, are covered with it; it is there eaten by the cattle as grass. It is so much altered in appearance and size, by cultivation, that those who are perfectly acquainted with it in their gardens, would not, without a considerable share of botanical knowledge, recognize it in its native state.

This excellent vegetable, which is in general use, not only in Britain, but over all the continent of Europe, and in many parts of America, has been in cultivation for an unknown period.

Those who have never seen the vast loads of this vegetable daily brought during its season, to Covent-Garden Market, will be surprised to hear, that in the parish of Mortlake alone, there are computed to be above eighty acres under this crop; and one gardener of the name of Biggs, has frequently forty acres under asparagus, and another near Deptford has eighty. The natural season of asparagus, round London, lasts from ten to twelve weeks; but forced asparagus is to be had from November until it be produced from the open ground. It brings the price of about one pound per hundred heads, during the months of November, December, January, and February, and in May and June, from 10*s.* to 2*s.* 6*d.* per hundred.

The varieties in general cultivation are the red-topped, or Dutch, which is the strongest of the two, and the green-topped, which is not so large, but is reckoned of a better flavor. The varieties in the seed catalogues, are the Battersea, Deptford, large Gravesend, large Reading, Dutch, Cork, and early Mortlake, but they are only considered as sub-varieties of the two former.

Angelica,—*Angelica archangelica*, (*Linn.*)—belongs to the class and order, *Pentandria Digynia*, and ranks under the natural order of *Umbelliferæ*. It is found in

Britain, but has been probably naturalized; it is also common in Lapland and Iceland. It appears to have been cultivated in England before 1568. This vegetable is also nearly supplanted by the more general use of celery, and like the Alisanders, is now little used in domestic cookery. The leaf-stalks are now only used for candying, and for this purpose, are in perfection in May. It is more generally used in medicine than in cookery. The roots were formerly blanched and eaten like celery. The young shoots are in great esteem amongst the Laplanders, who, in order to add to the pungency of the tobacco, which they are in the habit of using, mix with it the roots of *Angelica Archangelice*, but if this species be not at hand, they substitute those of *Angelica sylvestris*. It appears to be a very hardy plant, as according to the *Lachesis Lapponica*, it grows freely within 1400 feet of the line of perpetual snow. In Norway, bread is sometimes made of the roots.

ANISE,—*Pimpinella anisum*, (*Linn.*)—belongs to the class and order of *Pentandria Trigynia*, and natural order of *Umbelliferæ*. It is a native of Egypt, and introduced in 1551. A small portion of it is sufficient for a large family, being only cultivated for a garnish, and sometimes used for seasoning. It is extensively cultivated in Malta and Spain, and the seeds are thence imported into this country for distillation and expression. It is also used in medicine with beneficial effects.

BASIL,—*Ocymum basilicum* and *Ocymum minimum*, (*Linn.*)—belongs to the class and order *Didynamia Gymnospermia*, and natural order of *Labiatæ*. The former is a native of the East Indies, and was introduced in 1548; the leaves are used occasionally, both in salads and soups. The latter is also a native of the East Indies, and was introduced in 1573. The seeds of both sorts are seldom ripened in England, and are by the seeds-men, procured from Italy.

BEAN,—*Vicia faba*, (*Linn.*)—belongs to the class and order *Diadelphia Decandria*, and natural order *Leguminosæ*. The bean is a native of Egypt, and other parts of the east. One variety, the Mazagan, is indigenous to Mazagan, a Portuguese settlement on the African coast. The bean has been known in this country from time immemorial, and it is supposed to have been introduced by the Romans. There are many varieties cultivated, some of them differing so little in their characteristics, as to be scarcely distinguished. The following are the best:—Early small mazagan, early long-pod, sword long-pod, Turkey long-pod, early small Lisbon, large long-pod, broad Spanish, Windsor broad, large Kentish Windsor, Taylor's Windsor, Sandwich, Tokar, white blossomed, green nonpareil, Mumford, dwarf-cluster, fan or bog, and the new red blossomed. Of these, the three former are the earliest, the others, excepting the dwarf-cluster, fan or bog, are for principal crops. The dwarf-cluster, fan or bog, is for cultivation in borders, and in small gardens, when there is a paucity of room, as it occupies little space. *Delaunay in Le bon Jardinier*, describes a new sort cultivated about Paris, called the green bean of China. We cannot, however, give an opinion of its merits, never having seen it. It is, however, described as a good bean, late, but productive, and the seeds are said to remain green, even after being ripe and dried.

BEANS, *Kidney* or *French*,—*Phaseolus vulgaris*, (*Linn.*)—belonging to the class and order *Diadelphia Decandria*, and natural order of *Leguminosæ*. It is a native of India, and introduced in 1579 or earlier, and cultivated in our gardens as a tender and much-admired esculent; the parts used, are the pods before they have arrived at maturity. In France, and other parts of the continent, as well as in America, they cultivate them in the fields, and it has been suggested, that the same practice would be beneficial in this country, as they will grow in any tolerably good soil, and become particularly useful in times of scarcity, either in their green state, or dried and ground into flour. On the continent, the ripe seeds are used in cookery, forming what are called harricots of different kinds, and are also put into some sorts of soups.

At the end of the season the crop is gathered, baulm and all, and after being properly dried, they are stacked, and the seeds threshed out when wanted.

The sorts cultivated are the early yellow dwarf, early red speckled, early black or negro, early white, Battersea white, Canterbury white, black speckled, brown speckled, dun coloured, striped, tawny, large white, dwarf, China. The first four are generally used for forcing, and the Battersea and Canterbury are generally preferred by the London market-gardeners for general crops for sale, as being prolific bearers.

Beans, *Kidney*, or *Scarlet and white runners,—Phaseolus multiflorus,* (*Linn.*)—is a native of South America, and introduced in 1633. It is used for all the purposes of the last, but differing from it so much in its botanical character, as to constitute a distinct species. It differs also in its culture on account of its being a climbing plant, and requiring to be supported by means of stakes, trellices, or other means. It will grow on the ground, as the other kinds, but arrives at greater perfection when supported by sticks or strings. In cottages and small gardens, they are successfully cultivated, by planting them in rows to hide any disagreeable object, or they are trained over arbors, or up the front and ends of the cottages. If supplied plentifully with water, and the pods picked off as they are fit for use, they will continue a useful ornament for many weeks. The frost being the only thing to injure them under these circumstances.

The varieties of the runners are:—The scarlet, large white, white Dutch, princess runner, and variable runner; of these the first is the best, and is most generally cultivated; next to it is the large white. The white Dutch does not last so long in bearing, and the last is not so much esteemed, neither is it so extensively cultivated. The princess runner has lately been brought into notice, it is an excellent bearer, and the pods are used when full grown. All the sorts of French beans, are much improved by being transplanted, and can be forwarded much earlier, if reared in flat boxes, or in pans, and when about three inches in height, transplanted where they are intended to remain. None of the varieties are fit for forcing, as they all require too much room.

Beet, Red,—*Beta vulgaris,* (*Linn.*)—belonging to the class and order *Pentandria Dyginia,* and natural order *Chenopodeæ.* Is a native of the sea-coast of the south of Europe, and cultivated here by Tradescant the younger, in 1656, consequently it must have been introduced at an earlier period. The roots are used in salads, boiled and sliced, and also as a garnish, but particularly as a pickle. They are most esteemed, when their roots boil of a beautifully red colour. The roots, when dried and ground, are sometimes mixed and used with coffee. The seeds of good red-beet are difficult to be procured; therefore, when once a gardener is in possession of a good sort, he ought to endeavour to save his own seed. The following are the sorts grown in the garden of the Horticultural Society of London:—The large rooted, long rooted, dwarf, turnip rooted, small red, green topped, and Castlenaudari; of these, the dwarf is the best, and the turnip rooted, the earliest. The Castlenaudari is much esteeemed on the continent, and is said to have the flavour of a nut.

Beet, White,—*Beta Cicla,* (*Linn.*)—belonging to the same genus as the preceding, but differing from it in botanical characters, and in garden uses. This species being cultivated solely for its leaves, which are used as spinach, or put into soups, and the mid-ribs and stalks are stewed and eaten as asparagus, under the name of chard. It is a native of the sea-coasts of Spain and Portugal, and introduced in 1570, and cultivated by Gerrard, and Parkinson, who was botanical gardener to Charles the first. There are three varieties cultivated; the first is the common white, the second, the great white or Swiss chard, and the third, though seldom grown in our gardens, is an extremely useful agricultural root, called mangel würzel, or the great German beet.

BEET, SEA,—*Beta maritima*, (*Linn.*)—belonging to the same genus with the two last, but so differing in its botanical characters, as to constitute a distinct species. It is a native of our sea-coasts in many places, in the Isle of Wight, Coast of Sussex, Western Coast, &c., is seldom cultivated in our gardens, but there is little doubt that it would be much improved by cultivation, and be a valuable accession to our spinaceous vegetables.

BROCCOLI,—*Brassica oleracea*, a sub-variety of the variety *botrytis* (*Linn.* and *Decandolle*)—belonging to the class and order *Tetradynamia Siliquosa*, and natural order *Cruciferæ*. However singular it may appear, professor *Decandolle* and others have proved, that all the varieties of broccolis have their origin in the Brassica oleracea, or the common wild cabbage. Miller mentions several kinds of broccoli as being cultivated in his time; he says, "the *Roman*, *Neapolitan*, and *black broccoli*, are in use, but of those, the *Roman* is the best." Since his time, they have wonderfully increased, but this is less surprising, for of all the brassica families, they are the most inclined to sport into varieties. They are supposed by some to have sported from the cauliflower, which is said to have been introduced into this country, from the Isle of Cyprus, about the middle of the sixteenth century. Miller seems to prefer them to cauliflower, as being more tender, and by many they are preferred even at the present time. The best collection of broccolis we have met with, is that of Messrs. Ronalds', of Brentford, and given as follows in the Hort. Trans.—Purple cape, or autumnal; green cape, or autumnal; Grange's early cauliflower broccoli, green close-headed winter broccoli, early purple, early white, dwarf brown, close-headed broccoli, tall large-headed purple broccoli, cream coloured, or Portsmouth broccoli; sulphur coloured broccoli, spring white, or cauliflower broccoli; late dwarf close-headed purple broccoli, latest green, or Siberian, or Danish broccoli. To this list may be added, the sprouting broccoli, and Belvidere, or improved white, two sorts which may be considered as distinct from any of the above-mentioned sorts, and are in our estimation excellent. The former of these, is a hardy spring sort, and the latter, a handsomely formed and equally good one, but probably not equally hardy.

Of Messrs. Ronalds' lists, the two former are nearly allied to each other, differing only in colour, and the head of the second being rather larger, as well as the whole plant stouter than the first. The third is a well-known sort, and will amply repay the expense of cultivating; the fourth is said to be rather new, and is supposed to be a seedling from the second; it does not attain to a great size. The early purple is a good sort, but is apt to branch, if planted in too rich ground. This sort grows to the height of two or three feet, and is a strong growing plant. The early white is also a fine broccoli of a beautiful colour, and grows nearly three feet high. The cream-coloured, or Portsmouth, is an excellent sort, and merits general cultivation, we would include it as among the best for general use. In May, 1819, a head of this sort, grown in the garden of the late Sir Joseph Banks, was sent to the Hort. Soc., which measured above two feet in circumference, and quite firm and close. The sulphur-coloured is a valuable sort, hardy, compact, and rather conical in the head. The spring white is a valuable sort, the leaves of which grow in such a cucullated manner as almost to hide the flower, and serve as a shield to protect it from the frost common in the spring months. The two latter sorts are very hardy, particularly the last, which no winter can destroy. This sort for a late crop should be planted to a large extent, as it comes into use at a season when vegetables are most in demand, and it may be planted closer than any other, so that a large quantity may be produced on a small piece of ground.

Italian cabbage, the name by which broccolis were formerly known, must have been cultivated in Britain at an earlier period. It is probable, that the Romans introduced it from Italy.

Cape broccoli is said to have been introduced from the Cape of Good Hope, by the Hon. Marmaduke Dawnay, and first cultivated in Surrey.

BORECOLE,—*Brassica oleracea*, var. *Sabellica.*—Is another family, which claims a common origin with the broccoli, cauliflower, &c., in the *Brassica oleracea*, or common cabbage. There are several valuable sub-varieties, more or less esteemed by the individuals, where they are principally grown. The sorts cultivated are as follow: the green borecole, Scotch kale, or Siberian borecole. This is a very hardy sort of kale, and although not universally cultivated in England, is still worthy of our attention. To cottagers and farmers a more useful vegetable cannot be introduced in their little gardens, for no frost hurts it; and if planted on ground which has been occupied with the early crops of peas or potatoes, it will have attained a considerable size before the rigour of the winter sets in. It is universally cultivated by the Highlanders, and is found to stand the most severe winter. It may be considered the national vegetable of Scotland, and is the regular garnish of the boiled beef at weddings, curling dinners, &c. It is surprising to see the numerous varieties that this sort sports into in one small cottage-garden; from twenty to thirty distinct varieties may be easily distinguished, by the different shades of colours and the form of the leaves. The purple or brown kale is nearly allied to the last, and is equally hardy. The German kale, German greens, or curlies, is a beautiful variety, and very hardy: of this there are two sub-varieties, one of which grows close to the ground, the other grows much taller, and furnishes a good supply of sprouts in spring. This is the sort most in cultivation in the gardens in Scotland.

The variegated borecole, and the thousand-headed cabbage, are merely curious varieties, but inferior to the others, in their general merits.

The Egyptian kale, rabi kale, ragged Jack, and the Jerusalem kale, are dwarf-growing sorts; they resist black frosts, and come in for a late supply. The Buda kale, Russian kale, Prussian kale, and Manchester kale, are supposed to differ very little from the former. A writer, however, in the Transactions of the Horticultural Society, has, by blanching Buda kale, very much improved it; and the process is performed nearly in the same manner as sea-kale is blanched, by inverting a flower-pot over it. It may be rendered more delicate by blanching, as well as any other kale which is treated in the same manner. As a substitute for sea-kale, it may be of importance; for, by a little management, it might be had at a season when sea-kale cannot be procured.

The palm borecole is not likely to be much cultivated; it is a rambling growing sort, and is cultivated in the orchards of the islands of Jersey and Guernsey, by planting it among the fruit-trees; and as it increases in growth, it reclines among the lower branches of the trees, and may in that case escape the frosts. We have grown it to the height of twelve feet by the side of a wall.

The turnip-cabbage, or turnip-rooted borecole, is a curious variety. In a recent work published, two sub-varieties of this sort are mentioned, one of which has the turnip or bulbous part, which is the part used, growing above the surface, and in the other sort, it grows under ground. The roots are cut in slices for soups, and by some are used like common turnips; but unless they be used when they are young, they become rank and unpalatable. They are very hardy, and stand a severe frost, and require good rich ground to bring them to any profitable size. The Portugal or large-ribbed borecole, is not much used, nor does it possess any great merit. The Woburn kale differs from all the foregoing sorts, inasmuch as they are propagated by seeds, whereas this variety is propagated by cuttings. It has been grown at the Duke of Bedford's, at Woburn Abbey, from which place it takes its name.

BRUSSELS-SPROUTS,—*Brassica oleracea*, a sub-variety of the variety *Sabauda.*—Of this excellent vegetable we have only this one sort, which derives its name from the city of Brussels, where it is both much esteemed and cultivated. It appears, by a communication to the Horticultural Society by Van Mons, that it is mentioned, in the market-regulations of that place, so early as the year 1213. The top is different in flavour from the side-sprouts, and should, in cultivation, be taken off to encourage the growth of the sprouts. The plants from the circumstance of their heads being cut off, and their leaves falling off, need not be planted at more than eighteen inches each way, so that upon a small piece of ground a large produce is obtained.

It is difficult to procure the seeds genuine, therefore it is either better to have them sent direct from Brussels by some confidential person, or after having once obtained a good sort, to save the seeds for future use. Van Mons says, that it is usual to save the seeds indiscriminately from plants, which have not been topped, but he intends in future to save only from those plants which have been topped. The principal consideration, however, in the saving of this seed, as well as that of all other plants of the brassica tribe, is to place them where there is no chance of their being impregnated by the farina of other plants of the brassica family. This is, however, very difficult to be accomplished in the vicinity of an apiary, as the bees are apt to carry the farina of the brassica tribes to their different varieties, and thereby give a spurious character to the seed collected from them.

BORAGE,—*Borago officinalis*, (*Linn.*)—belongs to the class and order *Pentandria Monogynia*, and to the natural order *Boragineæ*. It is a native of Britain, and is not unfrequently met with in waste places. It is seldom used in modern cookery, although formerly it was in high repute. The juice affords nitre, and the withered stems have been observed to burn like match-paper. It is used in England as one of the components of a particular beverage, known by the appellation of a cool tankard.

BURNET,—*Poterium Sanguis orba*, (*Linn.*)—belongs to the class and order *Monœcia Polyandria*, and ranks in the natural order of *Rosaceæ*. Is a native of Britain, growing on dry chalky pastures. The leaves are sometimes used in salads, and occasionally in soups. It was formerly in much repute, but at present it is almost quite disregarded. It was cultivated as a food for cattle for some years, on the authority and recommendation of Bartholomew Rocque, a farmer at Walham Green, near London.

BLESSED THISTLE,—*Centauria benedicta*, (*Linn.*)—belonging to the class and order *Syngenesia Frustranea*, and natural order of *Cynarocephalæ*. Is a native of Spain and the Levant, and introduced in 1548. It has never been much in use as a culinary vegetable, but as a medicinal plant it was held in high repute. It is now neglected both in medicine and rural economy.

BLADDER-CAMPION,—*Silene inflata.* (*Hortus Kewensis*), *Cucubalus behen.* (*Linn.*)—belonging to the class and order *Decandria Trigynia* and natural order *Caryophylleæ*. Is a native of Britain, and often found on the sea-shore. This plant was also much used formerly, but of late years has been neglected. The young tops were used, when boiled, nearly in the same manner as asparagus.

CABBAGE, common or white, *Brassica oleracea*, var. of *capitatæ*, (*Linn.* and *Decandolle*,)—belongs to the class and order *Tetradynamia Siliquosa* and natural order *Cruciferæ*. The *Brassica oleracea*, of which this is a cultivated variety, is a native of some of our sea-shores. Cabbages seem to have been one of the earliest vegetables which attracted the attention of mankind. They were well known and esteemed by the Romans, who probably introduced the cultivation of them into this country, bringing with them from Italy some of the sorts then cultivated by them.

The varieties of *Brassica oleracia* var. *capitata*, or white cabbage, cultivated in our gardens, are, the small early dwarf, early dwarf York, large early ditto, early dwarf sugar-loaf, large sugar-loaf, East Ham, West Ham, early Battersea, late ditto, early Imperial, Pentonville, Plaw's early, Deptford, Emperor, Antwerp, Russian, early London, large hollow sugar-loaf, large oblong hollow, large-round winter white, drum-head, round Scotch or white Strasburg, Baimbridge's flat Dutch. Of these, the first five are the best for early crops, and also for the latter ones. The last is an excellent sort for early summer use. The next five are good for principal summer crops. The Pentonville is a curious cabbage, wrinkled like the savoy, and very tender and white; it never closes nor becomes hard. It is decidedly the best for summer use; it continues delicate and well-flavoured when all others are rank and ill-tasted. Plaw's early, is also a good sort for either early or late crops; the rest may be cultivated for summer and autumn uses, and have each their respective merits. The drum-head and round Scotch are generally cultivated in fields for cattle. From the last of these two is prepared the *sauer kraut* of the Germans.

Cabbage, red,—*Brassica oleracia,* var. *rubra,* (*Linn.*)—belongs to the same natural and artificial class and order with the last-mentioned, and is another variety sported from the original *Brassica oleracia.* It is chiefly used for pickling and garnishing. The principal varieties cultivated are, the large red or red Dutch, dwarf red, and the Aberdeen red. The first is usually cultivated in market-gardens. The second is the best, and is usually grown in the gardens of gentlemen, and is most esteemed for its beautiful colour. The third is much cultivated for culinary purposes by the natives of Aberdeenshire, and some parts of the North of Scotland, and is an ingredient in the national dish, "*The kale brose.*"

Cauliflower, — *Brassica oleracia,* var. *botrytis.* (*Linn.* and *Decandolle,*) is another variety originating in the *Brassica oleracia,* and a much-esteemed culinary vegetable, being, according to Dr. Johnson, the best flower that grows in the garden. Cauliflower was first introduced to this country from the isle of Cyprus, about the middle of the sixteenth century. The culture of it was little attended to till the beginning of the seventeenth; and previous to the French Revolution, cauliflower-seed was regularly sent to Holland, and even to France; at the present day, English seed is preferred to that of the growth of either of those countries. The same remark which we made regarding the quantity of asparagus, cultivated round the metropolis for the supply of Covent-garden Market, &c., will also apply to the cultivators of the cauliflower, who have often many acres under this crop.

The sub-varieties in cultivation are the early, the late, and the red cauliflower; of these three, we have been unable to discover much difference in point of quality. Their distinctions are too trifling to merit the attention of the practical horticulturist. Like the rest of the brassica tribe, they are apt to sport into degenerate varieties from seed. "An action for damages was brought in Westminster Hall above a hundred years ago, against an innocent, but unfortunate gardener, for selling cauliflower-seed which only produced long-leaved cabbages. This circumstance has been particularly noticed by Linnæus, in his celebrated treatise on the sexes of plants, the '*Sponsalia Plantarum.*'"

Capsicum, *Linn.*—A genus belonging to the class and order *Pentandria monogynia,* and natural order *Solanaceæ.* There are three species in cultivation, and of these, there are many varieties.

Of these species, the *Capsicum annuam,* or Guinea-pepper, is, with its varieties, most generally cultivated. It is a native of India. It was introduced here in 1548, and cultivated by Gerrard. The unripe, or green pods, are used for pickling, and in their ripe state form a spice of the hottest quality, known by the name of Cayenne pepper. Of this species, there are varieties differing extremely in their fruit, as in the long-podded annual kind, with oblong pendulous or hanging scarlet-pods; with oblong pendulous yellow pods; with upright oblong scarlet pods; with short upright pods; with divided pods; and with long very taper pods; all of which often rise from the same seed of the common long-podded, red or yellow sort, rarely differing from each other in color, but often in the size, and position of their growth. The other species vary in the same manner.

The next species is the *Capsicum cerasiforme* (*Hortus Kewensis*). Is a native of the West Indies, introduced in 1759, and is used for the same purposes as the last. The varieties of this species differ in size, color, and shape. They are generally of a globular or cherry-shape, from which they derive their name; but are sometimes heart-shaped, bell-shaped, or angular, and are both red and yellow.

The third species is *Capsicum grossum*, or bell-pepper. Is a native of India, and was introduced in 1759. Is a biennial; the fruit is used for the same purposes as the foregoing, and by some it is preferred for pickling, the skin being thick, pulpy, and tender.

CARDOON or CHARDOON,—*Cynaria Cardunculus*, (*Linn.*)—belonging to the class and order *Syngenesia Polygamia Æqualis*, and natural order *Cynarocephalæ*. Is a native of Candia, and introduced into this country in 1658. It nearly approaches to the artichoke in appearance, and belongs to the same family. It is rather a singular circumstance, that it should be known in all the European languages by the same name. This plant is used in a variety of ways, particularly in French cookery. There is only one variety cultivated in our gardens, and that one not very generally. Mr. Neil says, that the native prickly sort is cultivated on the continent, under the name of cardoon of Tours, and is accounted preferable to the common sort which is cultivated in our gardens. It is truly singular, that that sort, whatever may be its qualities, has not been introduced into England. Ours is sold in the seed-shops for the Spanish cardoon.

CARROT,—*Daucus carota*, (*Linn.*)—belongs to the class and order *Pentandria Digynia*, and natural order *Umbelliferæ*. Is a native of Britain, found in chalky pastures and in waste places in almost every part of the kingdom. The effects of cultivation have entirely altered the appearance of its root, which is the part used. In its natural state, it is small, hard, and dry, of a white color, and strong flavor. In its cultivated state, the root becomes large, succulent, and of a red or yellowish color. We have no certain data to denote the precise time that carrots were first cultivated in this country; but in the time of Henry the Eighth, Hume, the historian, says, that neither "salads, carrots, turnips, nor other edible roots were produced in England." Previously to that time, these vegetables were imported from Holland and Flanders. That they did not originate in this country, like the sea-kale, is pretty evident from the above quotation. The leaves of carrots were held in esteem by the ladies, even of the gay court of Charles the First, for Parkinson, the botanic gardener of that monarch, informs us, that they wore them instead of feathers. The carrot is not an article only of garden produce, but is extensively cultivated in fields for cattle. The varieties cultivated are the following:—early red horn, common early horn, long horn, long white, yellow, long yellow, long orange, long red, long purple, and the Alteringham carrot. The two first are generally sown for the first crops; but the Alteringham is equally early, and in our opinion a much better carrot, indeed, it is the best sort in the country. The long white yellow is an excellent and rather curious variety, it eats sweet, and looks beautiful when dressed: it is good for autumn use, but does not keep well in store. Of its merits, in regard to economy, we have not yet had sufficient time to form a decision. The Alteringham is originally from Cheshire, and for general culture is the best. The long red is a large sort cultivated chiefly for cattle, and by farmers, for colouring butter. The orange, next to the Alteringham, is best for a general crop, and affords a variety in colour.

The purple carrot, though mentioned by some of the early writers on horticulture, seems to have been long disused in this country. It is well known in France, as the *Carrotte violette*; the root is thick at the top, and tapers suddenly. The outer part of the flesh, for about a quarter of an inch in thickness, is a deep purple, the inner part a light yellow, and the heart a dark yellow, but it is sometimes light also, divided from the flesh by a dark yellow ring. It is only cultivated on account of its singular appearance. The flavor is not so good as any of the others in cultivation. The French, however, esteem it highly, but consider it as apt to run to seed the same year in which it is sown.

Caraway,—*Carum carui*, (*Linn.*)—belongs to the class and order *Pentandria Trigynia*, and natural order *Umbelliferæ*. Is a native of Britain, and has been long cultivated. The seeds are used in confectionery and medicine. In the north, they often put them into cheese in the same manner as the Dutch; the Danes and Russians sprinkle the tops of their loaves with them. In Parkinson's time, the roots were eaten as parsneps, and by him preferred to that vegetable. They are not now used. The seed, which is much used by distillers, and in medicine, is grown chiefly in Essex.

Celery,—*Apium graveolens*, (*Linn.*)—belongs to the class and order *Pentandria Digynia*, and natural order *Umbelliferæ*. Is a native of Britain. It grows naturally in ditches, and generally near the sea. This vegetable is much improved by cultivation. The taste, in its natural state, is rank, and the whole plant of a coarse habit; indeed, in that state it is suspected to contain some of the narcotic properties of its near associates, *Œnanthe*, *Phellandrium*, &c. It is unsafe to gather it in its natural state, as many fatal instances are on record of people having been poisoned by eating plants of the two genera above-mentioned, by mistaking them for celery. The stalks, when blanched, are used raw as a salad, and in their unblanched state, are used in domestic cookery. It is in general use over almost all Europe. The turnip-rooted sort, or celeriac, is in general use among the Germans.

The sorts in cultivation in our gardens are, the upright Italian, large hollow upright, solid upright, large red-stalked upright, and the turnip-rooted, or celeriac. The first three sorts are preferable for general crops; the fourth is fit for stewing, and is hardy enough to stand a severe winter. The celeriac is cultivated for its roots, which may be preserved all winter in sand, or by any other ordinary means. It is much cultivated about Hamburg, and is thence imported to the London market.

Chervil,—*Scandix Cerefolium*, (*Linn.*)—belongs to the class and order *Pentandria Digynia*, and natural order *Umbelliferæ*. Is a native of Europe, but often found naturalized in many parts of England. Is used as a salad, and for garnishing; for the latter use there is a sort more curled in the leaves, which is to be preferred, and which is grown in all the Paris gardens. It is sold in our seed-shops under the name of curled chervil.

Clary,—*Salvia Sclarea*, (*Linn.*)—belongs to the class and order *Diandria Monogynia*, and natural order *Labiatæ*. Is a native of Italy, and introduced here in 1562. It is seldom used.

Coriander,—*Coriandrum sativum*, (*Linn.*)—belongs to the class and order *Pentandria Digynia*, and natural order *Umbelliferæ*. Is a native of the East, but introduced at an early period into England, and is now naturalized in many parts of it. It is sometimes used as a salad, and as an ingredient of soups. In Essex, and some other places, it is extensively cultivated for the seed, which is used by confectioners, druggists, and distillers.

CORN-SALAD, OR LAMB-LETTUCE,—*Valeriana Locusta,* (*Linn.*)—belongs to the class and order *Triandria Monogynia,* and natural order *Dipsaceæ.* Is a native of Britain, and was cultivated as a salad in the days of Gerrard, who says, that foreigners, while in England, using this salad, were the cause of its being cultivated in our gardens. It has long been a favorite salad in France, but is now little used here.

CRESS, AMERICAN,—*Erysimum præcox.* (*Smith.*)—belongs to the class and order *Tetradynamia Siliquosa,* and natural order *Cruciferæ.* Is a native of Britain, growing by the sides of ditches, and long supposed to be a variety of the *Erysimum Barbaria.* It is a biennial, forming an excellent and useful addition to our winter and spring salads, being extremely hardy, and is fit for use during the whole of the winter, if grown in any sheltered spot. It is sold in the seed-shops under the names of American cress, black cress, and French cress.

CRESS, WINTER,—*Erysimum Barbaria,* (*Linn.* and *Smith,*) *Barbaria Vulgaris* (*Hort. Kew.*)—belongs to the same class and order with the last species. This is found in situations similar, and often with the latter, by which reason they have been, till lately, confounded together. It is also a useful and hardy salad.

CRESS, GARDEN,—*Lepidium sativum,* (*Linn.*)—belongs to the class and order *Tetradynamia siliquosa,* and natural order *Cruciferæ.* Its native country is unknown, but it has been cultivated in this country since 1548. It is the principal of all the small salads, and is in very general cultivation. The varieties in culture are, the common plain-leaved cress; this is most extensively cultivated, but not by any means so fine as the Normandy or curled cress, which is not only a better salad and garnish, but much hardier and not so apt to run up into seed. If sown at the bottom of a south wall, it will stand all the winter, and come in at the spring with the American and winter cresses already noticed. It is not so good, however, for forcing as the common cress, being more likely to damp, in consequence of its larger and more succulent growth, unless it be sown very thin. The other sort of cress cultivated is, the broad-leaved; it is not much grown for a salad, but generally for rearing turkies, &c.

CRESS, INDIAN, OR NASTURTIUM,—*Tropæolum magus,* (*Linn.*)—belongs to the class and order *Octandria monogynia,* and natural order *Geraniaceæ.* Is a native of Peru, and cultivated here since 1686. The *Tropæolum minus* was introduced from Peru nearly a century before this sort, but, owing to its small size, is not cultivated for culinary purposes. The *Tropæolum magus* is here treated as an annual, but in its own country lasts for several years. The flowers are used for garnishing, and sometimes, with the young leaves, as a salad. The berries are gathered green, and pickled, and are in that form a good substitute for capers.

DANDELION,—*Leontodon Taraxacum,* (*Linn.*)—belongs to the class and order *Syngenesia Æqualis,* and to the natural order *Cichoraceæ.* Is a native of Britain, and a well-known weed. When blanched, however, it makes an excellent addition to our spring salads; and the roots are considered as good a substitute for coffee as chiccory. It may be stored in cellars, or barrels, like chiccory, for producing winter salads.

DILL,—*Anethum graveolens,* (*Linn.*)—belongs to the class and order *Pentandria Trigynia,* and natural order *Umbelliferæ.* Is a native of Spain, and introduced in 1570. It is used in soups and sauces, and other culinary preparations. It is not generally cultivated.

EGG-PLANT,—*Solanum Melongena,* (*Linn.*)—belongs to the class and order *Pentandria Monogynia,* and natural order of *Solanaceæ.* Is a native of Africa, and introduced in 1597. It is only cultivated in this country as an ornamental annual. In France and Italy, however, it is much used in cookery, and is nearly as much admired as the love-apple.

ENDIVE,—*Cichorium Endivia*, (*Linn.*)—belongs to the class and order *Syngenesia Æqualis*, and natural order *Cichoraceæ*. Is a native of China and Japan, and introduced in 1548. Is used as a salad, and for stewing. It is in much repute, both in Britain and on the continent. The varieties most generally cultivated are, the green curled-leaved, white curled-leaved, and broad-leaved Batavian. The former is most generally cultivated for principal crops. The second sort is a more delicate plant, and apt to damp off in wet weather. The third is not calculated to stand much frost, but for early autumnal use is much admired.

FENNEL,—*Anethum Fœniculum*, (*Linn.*)—belongs to the class and order *Pentandria Tryginia*, and natural order *Umbelliferæ*. Its native place is not exactly known, but it is now naturalized in Britain, and particularly in England. It is sometimes met with in chalky soils in Hampshire, Kent, and Surrey. It is one of the oldest inmates of the gardens, and is used in salads and for garnishes, and, when boiled, enters into many kinds of fish-sauces. The varieties cultivated are, the common or sweet, the dark green-leaved, and the dwarf. The latter sort has long been noticed, but not yet generally cultivated. Mr. Neil observes, that in consequence of "its being more tender than the common fennel, and often perishing in winter, horticultural writers have described it as an annual, under the name of *Anethum Segetum*, French or Azorian *Finochio*, or annual dill, and advise the culture of it thus: 'To be planted from June till November, and transplanted into trenches two feet asunder, and blanched. The thick fleshy stem to be eaten sliced in salads or soups.'"

GOURD and POMPION or PUMPKIN,—*Cucurbita*, (*Linn.*)—belongs to the class and order *Monœcia Syngenesia*, and natural order of *Cucurbitaceæ*. Natives of India and the East. There are several in cultivation, the principal of which are:

The WATER-MELON,—*Cucurbita citrullus*,—introduced in 1597 from the south of Europe. This is the melon of the ancients, and is at the present time much used in the south of Italy.

The SQUASH,—*Cucurbita Melopepo*. Is a native of the Levant, and was also introduced in 1597. In North America it is cultivated as an article of food.

The POMPION or PUMPKIN,—*Cucurbita Pepo*. Is also a native of the Levant, and introduced in 1570. This is the melon of the early English gardeners; the true melon, *Cucumis Melo*, being then called musk-melon. It is generally cultivated as an ornament of the garden, but by some of the peasantry for pumpkin-pies, &c.

The WARTED-GOURD,—*Cucurbita verrucosa*,—a native of the Levant; *Cucurbita auruntia*, the orange-gourd, a native of India; and the bottle-gourd, *Cucurbita lagenaria*, also a native of India, are only cultivated for curiosity.

The VEGETABLE MARROW,—*Cucurbita succado*,—has been introduced from Persia within these few years. It is cultivated in some families, and used for culinary purposes in every stage of its growth.

LEEK,—*Allium Porrum*, (*Linn.*)—belongs to the class and order *Hexandria Monogynia*, and natural order *Asphodeleæ*. Is a native of Switzerland, and introduced in 1562; but it is also a native of Egypt, and other parts of the east, and known to those countries before the departure of the Israelites. It is probable, however, that it was known to the natives of this country before the time recorded of its introduction. It is the national vegetable of the ancient Britons. Worlidge, speaking of Wales, says, "I have seen the greater part of a garden there stored with leeks, and a part of the remainder with onions and garlic." The sorts generally cultivated are, the Flanders, or narrow-leaved leek, the Scotch flag, or Musselburg-leek, and the London, broad-leaved or tall leek. The two latter are the best.

LETTUCE,—*Lactuca sativa*, (*Linn.*)—belongs to the class and order *Syngenesia Æqualis*, and natural order *Cichoraceæ*. It is not exactly known to what country this excellent vegetable owes its origin, but from the names of many of the varieties, they appear to have been brought from some of the Greek islands, and the coast of the Levant. It was cultivated or introduced in 1562. Some authors consider it only a variety of one of the native species. It is the best, and the most universally cultivated salad that we have. "It contains, like all the other species of this genus, a quantity of opium juice, from which, of late years, a medicine has been prepared by Dr. Duncan, senior, of Edinburgh, under the title of *Lactucarium*, and which can be administered with effect when opium is inadmissible."

The varieties are numerous, of which the following are in general culture:—green cos, white cos, silver cos, spotted cos, Egyptian early cos, black-seeded green cos, white-seeded green cos, brown cos or Bath, red cos, Florence cos, Paris cos, lap, brown Silesia, green Silesia, white Silesia, common white cabbage, large white cabbage, brown Dutch cabbage, imperial cabbage, grand admiral cabbage, tennis-ball cabbage, hardy green cabbage or capuchin, Malta cabbage, large Roman, Prussian, Mogul, Hammersmith, New Cape cos; of these, it may be admitted, that the New Cape cos is the best for general crops, as it grows very large, and is tender and crisp. The brown Dutch for being hardy, the lap to be drawn and used young in small salads; the spotted cos is curious. The hardy green, tennis-ball, and brown Dutch, are the most backward in starting to seed, therefore are highly useful for summer crops. To the brown Dutch, as being a hardy sort, we may add the hardy green, the common white, and the tennis-ball, any of which will stand the winter in ordinary cases. The cos lettuces, have upright, oval, or oblong heads; and the cabbage lettuces have round leaves, and squat, flat, full heads, but are white, firm, and close, when full grown.

LOVE APPLE, or TOMATO,—*Solanum Lycopersicum*, (*Linn.*)—belongs to the class and order *Pentandria Monogynia*, and to the natural order *Solanaceæ*. Is a native of South America, and introduced in 1596. Gerrard and Parkinson, the former writing in 1597, and the latter in 1656, describe it as a plant kept only for ornament and curiosity. They were, however, aware, that the fruit was used in the warmer countries of Europe for culinary purposes. Dodoens, in 1583, describes it as cultivated in the continental gardens, and says, that the fruit was eaten, dressed with pepper, salt, and oil. A white variety is mentioned by Besler, who wrote in 1618. This sort is also noticed by Tournefort, but is now lost. The fruit, when ripe, is used in soups and sauces, and the juice is preserved for winter, like catsup; it is also used in confectionery, as a preserve, and when green as a pickle. The French and Italians are particularly attached to this fruit, and scarcely a dinner is served in Rome or Naples, without this fruit being introduced in some shape or other. To supply this demand, whole fields, in the vicinity of those cities, are annually covered with Tomatoes. There are two varieties cultivated here, if colour be sufficient to mark them as such; the red and yellow, each of which has its sub-varieties, such as the large, small, cherry, and pear-shaped reds, and the large, the small, or cherry-shaped yellow. Of these, the large red, and large yellow are the best; the preference, however, may be given to the former.

MARJORAM,—*Origanum*, (*Linn.*)—belongs to the class and order *Didynamia Gymnospermia*, and natural order *Labiatæ*. There are different species cultivated, which are as follow:—

SWEET MARJORAM,—*Origanum Marjorana*. Is a native of Portugal, and introduced in 1573.

WINTER SWEET MARJORAM,—*Origanum Heracleoticum*. A native of Greece, and was introduced in 1640.

Pot Marjoram, *Origanum Onites.* A native of Sicily, introduced in 1759, and **Common Marjoram,** *Origanum Vulgare.* A native of our British woods on chalky soils. All the species are aromatics, and are used both in their green state, and when dry, for seasoning soups, broths, stuffings, &c.

Marigold,—*Calendula officinalis,* (*Linn.*)—belongs to the class and order *Syngenesia necessaria,* and natural order of *Corymbiferæ.* Is a native of France and Spain, and cultivated in this country since 1573. It is one of the oldest and best known inmates of our gardens. "Its flowers," Gerrard observes, "having been formerly in much repute, as comforters of the heart." It is now rarely employed for culinary purposes. In some of the midland counties, it is used in broths, and in others for colouring butter.

Mustard,—*Sinapis,* (*Linn.*)—belongs to the class and order *Tetradynamia siliquosa,* and to the natural order of *Cruciferæ.* There are two species cultivated.

Black Mustard,—*Sinapis Nigra.* Is a native of Britain, and is found in fields and cultivated places. This species is seldom cultivated in gardens, but is extensively grown in fields, for grinding and medicinal purposes. When cultivated in gardens, its young tops are used along with other small salads, and when full grown, the leaves are used as greens.

White Mustard,—*Sinapis Alba.* Found in the same places as the last, and is much used as a small salad. When the plant is young, it is agreeable, but when in its rough leaves, is harsh and unpleasant.

Orache, or Mountain Spinach,—*Atriplex hortensis,* (*Linn.*)—belongs to the class and order *Polygamia Monœcia,* and to the natural order *Chenopodeæ.* Is a native of Tartary, and introduced in 1548. It is used as a substitute for spinach, and is much used in France.

Onion,—*Allium Cepa,* (*Linn.*)—belongs to the class and order *Hexandria Monogynia,* and to the natural order *Asphodeleæ.* Neither the native place of the onion, nor the time of its introduction into Britain, can be correctly ascertained. Some suppose it to have originated in Spain, but it is more probably, a native of Egypt; the inhabitants of that country being partial to onions and garlic. It enters into the broths, soups, and other culinary preparations of almost every nation in Europe. This, like all the other alliceous vegetables, is of great antiquity. The sorts in general cultivation are, the silver-skinned, early silver-skinned, a sub-variety of the last, yellow, true Portugal, the seed of which is seldom imported into this country, Spanish, two-bladed, Strasburg, globe, James' keeping, Deptford, pale red, blood red, Lisbon, Tripoli; these are all biennials. The Welsh, under-ground, tree or bulb-bearing onion, and scallion, are perennials. The Reading, white Reading, white Portugal, white Spanish, Cambridge, and Evesham, are supposed the same as the Spanish; the Dutch and Flanders are the same as the Strasburg. The Deptford is only a sub-variety of the Strasburg. The Dutch blood red, St. Thomas, are only varieties of the blood red. For pickling, the three former are preferred. The Spanish is much cultivated about Reading, and is a good sort for general crops; but the Strasburg is most universally cultivated, both for principal spring and autumn crops; the globe is a good onion, and much admired by some gardeners. James' keeping, originated some years ago with a person of the name of James, a market-gardener in Lambeth Marsh, and is a good keeping onion. The blood red is much cultivated in Scotland and Wales, and esteemed in the London markets only for its diuretic qualities. The Tripoli is the largest onion cultivated, but is a bad keeper. The Lisbon is a pretty good onion, but does not always ripen its seed in this country. Of the perennial sorts, the Welsh is esteemed for being hardy, and coming into use early in spring; it is a native of Siberia. The under-ground species has, of late years, been much cultivated in the Isle of Wight, and on the coast in the vicinity of

Portsmouth, as it comes in use before any of the spring-sown ones; and in that case, the cultivators find a ready market for them, in the purveyors for the East Indiamen and other ships destined for long voyages, which leave England at a season, when no other onion would be in a condition to take into their stores. It is a useful onion, and will afford a supply should the other crops from seed suffer by grubs or other accidents. It does not keep beyond February. This species has been erroneously supposed to have been brought from Egypt by the British army about 1805, but it was known in this country many years before that time. It is, and has been cultivated in Devonshire for many years, and is described as growing in Driver's nursery in 1796. It is cultivated in the vicinity of Grand Cairo, and esteemed among the Egyptians, who are partially fond of almost all the alliceous plants.

The tree, or bulb-bearing onion, *Allium cepa* var. *vivipara*, came originally from Canada, where the climate being too cold for onions to flower and seed, becomes (as in the cases of many Alpine grasses, for example, *Poa et Festuca Vivipara*) viviparous, and bears bulbs instead of flowers. This is one of Nature's grand provisions for the propagation of plants, when the summer is not of sufficient duration for the perfecting of the flowers and seeds, by the regular mode of impregnation, &c. By a mode peculiar to herself, Nature changes the parts of fructification from their natural dispositions, and forms them into bulbs or embryo plants, which, when sufficiently matured, drop down, and either strike root that autumn, or else lie dormant till the return of another short summer, when they shoot up, and become plants similar to their parents. This curious mode of propagation is common in the Alpine regions, and is not only exemplified in the two grasses above-mentioned, but in that rare plant, *Saxifraga cernua*, in *Polygonium vivipara*, and many others. This species of *Allium* is not likely to come into general cultivation, although the cauline bulbs, when planted, become onions of a good size. It is our opinion, that the largest of the cauline bulbs are calculated for pickling; at least it would be worth while to make the experiment.

Scallion. Miller mentions this as a distinct species; but some only consider it to be the Welsh onion, and others think it is a sort of hollow leek, a species of *Allium* grown in Pembrokeshire, and other parts of South Wales, with a cluster of bulbs like that of eschalots.

Parsley,—*Apium Petroselinum*, (*Linn.*)—belongs to the class and order *Pentandria Trigynia*, and to the natural order *Umbelliferæ*. It is a native of Sardinia, and was introduced in 1548, but is now naturalized to Britain. It is found in waste places, but generally near old gardens. The sorts in cultivation are, the common plain-leaved, the curled thick-leaved, and the long-rooted or Hamburg parsley. The first is seldom cultivated, and should be exploded from our gardens, as, in its general appearance, it is often mistaken both for hemlock, *Conium maculatum*, and Fool's parsley, *Æthusa cynapium*, both of which are deleterious, the former being one of our most powerful vegetable poisons. The curled-leaved is both a much finer and a more beautiful sort, and, by generally adopting its cultivation, no risk would be run of mistaking it for either of the two plants above-mentioned. There is a sub-variety, called the giant-parsley, which grows large, and is preferable to the others. The Hamburg sort is cultivated for its long fleshy roots, and was probably introduced or much cultivated near Hamburg, from which place it derives its name. No seed sown in the culinary garden remains so long under ground as that of parsley: this circumstance should be taken into consideration at the time of sowing.

Parsnep,—*Pastinaca Sativa*, (*Linn.*)—belongs to the class and order *Pentandria Digynia*, and to the natural order *Umbelliferæ*. Is a native of Britain, and abounds in chalky fields, and road-sides in many parts of Hampshire, Surrey, and Kent. It is astonishing to see to what a depth the roots of this plant will penetrate into hard chalky rock. By cultivation it has been much improved. In its natural state, it has a small hard root, and of rather an unpleasant taste, but, in its cultivated state, it has a large well-flavoured root, and abounds with saccharine and spirituous properties. It has long been an inhabitant of our gardens, but not so generally cultivated now as formerly. Amongst the Catholics it is a favourite Lent root, being eaten with salted fish. In some parts of Scotland the roots are dressed along with potatoes, and form a good dish for the children of the peasantry. Parsnep-wine is well known. In the north of Ireland, a table-beverage is prepared from the roots brewed along with hops. We have only one variety cultivated, but the French cultivate three: the *Siam*, the *Coquaine*, and the *Lisbonaise*. Of these, the first is the smallest, but best flavoured; the second is the largest, and cultivated chiefly in the islands of Jersey and Guernsey, where the roots sometimes attain the length of four feet, and are often sixteen inches in circumference, and rarely so small as six inches. This variety deserves the attention, not only of our cottagers, but also of our dairy-farmers, few vegetables being better for milch-cows; and in situations, where the soil is light, deep, and sandy, probably a better crop could not be grown for that purpose. The third variety, Lisbonaise, is nearly as good as the former, but does not grow to such a length, and probably would be better for field culture. Depth of soil, however, is not so material in the cultivation of parsneps, if all other circumstances be favourable; for, as has been already observed, their roots penetrate to the depth of three or four feet in solid chalk; nevertheless, the looser the ground is, the larger they will become.

PEA,—*Pisum Sativum*, (*Linn.*)—belongs to the class and order *Diadelphia Decandria*, and natural order of *Leguminosæ*. Is a native of the south of Europe, but when introduced into this country we have no certain account. In Queen Elizabeth's time, peas were brought from Holland, and were considered fit only for the nobility, being brought from so great a distance, and at such a great expense. Numerous varieties are cultivated in our fields and gardens, the principal of which are as follow: Bishop's dwarf early, Cormack's double-blossomed early frame, Perkin's early ditto, old or true early frame, early Charlton, early golden ditto, early Nichol's golden ditto, common Charlton, early single-blossomed, Reading hotspur, golden hotspur, dwarf marrowfat, tall marrowfat, green marrowfat or Patagonian, Knight's wrinkled, or marrow; Knight's new dwarf ditto, Spanish moratto, blue Prussian, white Prussian, egg, white rouncival, gray rouncival, tall sugar, dwarf sugar, crown or rose, true dwarf scymetar, sickle pea, dwarf blue imperial, improved ditto ditto, tall ditto ditto, new green nonpareil, royal dwarf, Leadman's ditto, Spanish ditto, prolific ditto, late Spanish ditto, early dwarf frame, for forcing, and Nanterre, or earliest French pea. Of these, Bishop's early dwarf, a new pea, raised by Mr. D. Bishop, in Perthshire; the early dwarf frame, true early frame, are the best sorts for forcing, or with the early Charlton, the best for early crops in the open air. The Charltons are profitable, as well as early peas, and are suited for cottagers, and small gardens, as are also all the varieties of dwarfs, as they occupy little ground, and other crops of vegetables may be planted between their rows. Of the middling tall growing sorts, the blue Prussian, dwarf marrowfat, are excellent bearers, and good-flavoured peas; and, of the tallest, the tall marrowfat and Knight's wrinkled marrow are the best; the latter is evidently, under good culture, the best-flavoured and profitable late pea that is now known. It is not so profitable to market-gardeners, nor to cottagers, as it requires stakes of seven or eight feet in height. Leadman's dwarf is a good late pea, and much esteemed for its flavour. The sugar-pea is used nearly in the same manner as kidney-beans; the pods being deprived of the inner tough film render them very tender. It was only introduced about the middle of the last century. It is much used in France. All the culinary plants of the natural order *Leguminosæ*, are of great antiquity, and it is probable that they were among the first which attracted the attention of man in an uncivilized state. The nimble tailor, early May, or double-blossomed frame, is one of our best and earliest peas. It was imported from Holland in 1814. The pea, as an article of food, possesses great interest; the peasantry of Scotland make meal of it, of which they prepare a wholesome and nutritious bread.

Purslane,—*Portulaca oleracea, (Linn.)*—belongs to the class and order *Dodecandria Monogynia*, and to the natural order *Portulaceæ*. Is a native of South America, and introduced in 1652. It is used in salads, and sometimes pickled. There are two varieties in cultivation, the green and yellow, or golden. By some they are made two distinct species, under the names of *Portulaca oleracea* and *Portulaca sativa*.

Radish,—*Raphanus sativus, (Linn.)*—belongs to the class and order *Tetradynamia siliquosa*, and to the natural order *Cruciferæ*. Is a native of China, and mentioned by Gerrard, in 1534. There are several varieties in cultivation, and are divided into spring, autumn, and winter kinds. The following is from the Transactions of the Horticultural Society:—

The Spring and Summer kinds are, the "scarlet, or salmon-coloured, and its sub-varieties.—Short-topped scarlet, and early frame scarlet; which are the two sorts generally cultivated. Purple; an early sort, of good flavour, but at present neglected. Long white; the original variety, cultivated in Gerrard's time, white semi-transparent and delicate:" these are long sorts. The turnip sorts are, the "white; root globular, like a turnip. Early white; a sub-variety. The pink; rose-coloured, scarlet, and crimson, are names applicable to one sort which approaches to the pear-shape."

The Autumn kinds are, "White Russian; the root larger than any of the long-rooted kinds, white, tapering like a carrot, flavour nutty, like that of the rampion. Yellow turnip; root large, ovate, yellow, or dusky-brown, and rough without, but the flesh white. Round brown; root large, shape irregular, externally matted with greenish brown, and the flesh soft, and of a greenish white."

The Winter kinds are, "White Spanish; root large, oval, outside white tinged with green, flesh hot, firm, solid, and white. Oblong brown; root middle-sized, pear-shaped, outside coat rough and brown, marked with white circles; flesh hot, firm, solid, and white, plant very hardy. Black Spanish; root large, irregularly pear-shaped, rough and black externally, and the flesh hot, firm, solid, and white; very hardy. Purple Spanish; a sub-variety of the black, with a purple skin."

The roots are much esteemed as a salad, and are the only part of the plant generally used in a raw state. The pods are pickled, and considered a substitute for capers. Sometimes the tender tops are used along with other small salads; and they were anciently boiled, when full grown, and used as greens. The long-rooted are best for principal crops, although for variety, the turnip sorts are also sown during the whole of the summer. The Spanish may be stored for winter use, among sand or otherwise, with other winter roots.

Rampion,—*Campanula Rapunculus, (Linn.)*—belongs to the class and order *Pentandria Monogynia*, and to the natural order *Campanulaceæ*. Is a native of England, though not much cultivated. The roots are like a radish, and have a nutty flavour, which, with the leaves, are the parts used in spring salads.

Rape,—*Brassica Napus, (Linn.* var. *oleifera* of *Decandolle)*—belongs to the class and order *Tetradynamia Siliquosa*, and natural order of *Cruciferæ*. Is a native of Britain, and found in corn-fields and cultivated places. The young seed-leaves gathered, are used with mustard and cress, in salads. It is much used in agriculture.

Savory,—*Satureja, (Linn.)*—belongs to the class and order *Didynamia Gymnospermia*, and natural order *Labiatæ*. There are two species cultivated: the—

Summer Savory,—Satureja hortensis. Is a native of Italy, and known in this country since 1652.

Winter Savory,—Satureja Montana. Is a native of the south of Europe, and known in this country since 1652. Both the species are cultivated in every garden, being used for seasoning, and other made-dishes in cookery.

SALSIFY,—*Tragopogon porrifolius,* (*Linn.*)—belongs to the class and order *Syngenesia Æqualis,* and natural order *Cichoraceæ.* Is a native of Britain, and has probably been naturalised. The *Tragopogon pratensis,* another plant of this family, was cultivated in the gardens in the time of Gerrard and Parkinson, but have been supplanted by the *Tragopogon porrifolius.* The roots are used either boiled or stewed, and the young shoots are used in spring as a substitute for asparagus.

SAVOY,—*Brassica oleracea,* var. *Sabauda,* (*Linn.*) *Brassica oleracea,* var. *bullata* of *Decandolle*—belongs to the class and order *Tetradynamia Siliquosa,* and natural order of *Cruciferæ.* This is another of the many varieties of culinary vegetables which have taken their origin from the common white cabbage, the *Brassica oleracea.* This family is distinguished from all the others by the rugosity of its leaves, and is divided into the following varieties: the green, the dwarf, and the yellow savoy; and these again into the sub-varieties: the round, the oblong, and the conical or sugar-loaf shaped; all of them being excellent autumnal greens. The green savoy should be first used, as it is less hardy than the yellow, and the dwarf is the hardiest of them all. Any of them will, however, stand in ordinary seasons, till after the middle of winter.

SCORZONERA,—*Scorzonera Hispanica,* (*Linn.*)—belongs to the class and order *Syngenesia Æqualis,* and natural order *Cichoraceæ.* Is a native of Spain, the south of France, and Italy, and cultivated in the gardens of this country since 1576, mostly for its roots.

SEA-KALE,—*Crambe Maritima,* (*Linn.*)—belongs to the class and order *Tetradynamia Siliquosa,* and natural order *Cruciferæ.* Is a native of our sea-shores, and has been used by the inhabitants of some parts of England, from time immemorial. The late Mr. Curtis was the first who brought it into general culture, although it had been cultivated partially in this country for upwards of two hundred years, and appears to have been sent to the continent by the two botanists, Lobel and Turner, but whether as a culinary or botanical plant does not appear. Parkinson and Bryant both say, that the leaves were used by the inhabitants of the sea-coast boiled, and eaten as cabbage; from which it derives the name of sea-cabbage, or sea-kale. It was probably first cultivated in the south of England, as we are informed, that it was brought to Chichester market, in a cultivated state, in 1753. It was cultivated by Dr. Lettsom in 1767, and by him brought into notice in the London markets. In Scotland, so early as 1774, directions are given for its cultivation by Gordon, in his Gardener's Dictionary, who recommends covering the beds, with sand or gravel, to the thickness of four or five inches. Although sea-kale be now a common vegetable, in every part of this country, it is singular, that the French, who are naturally fond of light vegetable food, should not more readily adopt its cultivation. It has one great advantage over all other vegetables of a culinary nature, which is, that it can be had nearly all the year in perfection. By repeated cutting, in cold situations, it can be obtained till the end of June, and again, by forcing, in November. It is not, like most other vegetables, injured, but improved by forcing. This vegetable is cultivated on a large scale by the London market-gardeners, several individuals having a number of acres under crop at the same time, and find a ready demand for it in all the markets of the metropolis. The price is about four shillings a punnet (*a small basket*) from December till April; and, after that time, seldom sells for less than half-a-crown or three shillings.

Scurvy-grass,—*Cochleria officinalis,* (*Linn.*)—belongs to the class and order *Tetradynamia siliculosa,* and natural order *Cruciferæ.* Is a native of Britain, growing on many of our sea-shores. It is not generally cultivated in our gardens, but makes a wholesome ingredient in our salads, where it is required. Its medicinal properties are considered as anti-scorbutic. The variety, called Dutch scurvy-grass, is thicker, and more succulent in its leaves, and is the best for cultivation.

Skirret,—*Sium Sisarum,* (*Linn.*)—belongs to the class and order *Pentandria Digynia,* and natural order *Umbelliferæ.* Is a native of China, and known in this country since 1548. The roots are the parts of the plant used, but at the present day are not so much esteemed in culinary preparations as formerly.

Spinach,—*Spinacia oleracea,* (*Linn.*)—belongs to the class and order *Diœcia Hexandria,* and natural order *Chenopodeæ.* It is supposed to be a native of western Asia, but that is only conjecture. It has been cultivated here since 1568, but probably was known in this country long before that period. It is used in culinary preparations in various ways, and esteemed in all families. There are only two varieties cultivated: the prickly-seeded and the round-seeded. The former is preferred for winter and autumn sowings, being more hardy: the latter for general crops in summer, the leaves being more succulent and tender.

Spinach, New Zealand,—*Tetragonia expansa*—belongs to the class and order *Icosandria Pentagynia,* and natural order *Ficoideæ.* This is a very recently introduced plant into our culinary gardens, and is an excellent substitute for spinach. It is a native of New Zealand, as the name implies, and was introduced by the naturalists, who accompanied Captain Cook to that country. It was discovered by them growing by the sides of woods, in bushy sandy places. It did not appear to them that the natives ever used it in any form. It was introduced in 1772 by Sir Joseph Banks, among many other seeds from the same country, and cultivated here as a green-house plant, but is now cultivated in almost every garden as a half-hardy annual, and is found to be about as hardy as the French-bean or nasturtium. A few plants, if properly managed, are found to be sufficient for a large family. It is dressed in the same way as spinach, and, when upon the table, can be distinguished only by few from the common spinach.

Spinach, wild,—*Chenopodium Bonus Henricus,* (*Linn.*)—belongs to the class and order *Pentandria Digynia,* and natural order *Chenopodeæ.* Is a native of Britain, and found plentifully by the sides of roads near villages, but seldom at a great distance from houses. It is cultivated in Lincolnshire in preference to the garden-spinach. The young shoots, peeled and boiled, are eaten as asparagus, and resemble that vegetable in flavor. It is not in general cultivation in the gardens.

Succory or Wild Endive,—*Cichorium Intybus,* (*Linn.*)—belongs to the class and order *Syngenesia Æqualis,* and natural order of *Cichoraceæ.* Is a native of Britain, and found by road-sides in calcareous soils. This plant is but little cultivated in this country, but is in high repute in Italy and France. When blanched, it has much the appearance of endive, and in that state is the *Barbe de Capucin* of the French. It has attracted the attention of both the French and English agriculturists, and has been cultivated by them as food for cattle. In Holland and Flanders it is extensively cultivated for the roots, which the inhabitants of those countries, and almost all the people on the continent, grind and use for coffee, either by itself, or mixed with a small portion of genuine coffee.

Thyme,—*Thymus vulgaris,* (*Linn.*)—belongs to the class and order *Didynamia Gymnospermia,* and natural order *Labiatæ.* Is a native of Spain and Italy, and has been cultivated in this country since 1548. It is a well-known fragrant plant, and cultivated in all culinary gardens. There are two species in cultivation, and three varieties of the first or common thyme, viz. the common narrow-leaved, and broad-leaved, which is less common, and the variegated-leaved, which is grown for ornament.

Thyme, lemon,—*Thymus citriodorus*,—which has been supposed to be only a variety of the common wild thyme, *Thymus serpyllum*, but it is sufficiently distinct to form a species of itself. It is used much for the same purposes as the *Thymus vulgaris*.

Turnip,—*Brassica Rapa*, (*Linn.* and *Decandolle*,)—belongs to the class and order *Tetradynamia Siliquosa*, and natural order of *Cruciferæ*. Is a native of England, but is better known in a cultivated state. The roots are used in various ways in almost every family, and in all parts of Europe. In spring, the tops afford an agreeable and delicate green, and are acceptable to the mechanic and cottager, as well as to the peer. It is uncertain when turnips were first cultivated in Britain, for we find, that in the reign of Henry the Eighth, they were imported from Flanders, and were not cultivated here, as their culture was not then understood. In the low countries, and many parts of Germany, they have been cultivated as far back as the records of the history of those countries carry us. Sir Richard Weston is the first historian, who speaks of them as being cultivated as food for cattle in England, and that not until about the middle of the seventeenth century. Worlidge, writing in 1668, says, that flies are the greatest enemies that turnips have; and Ray, who wrote about twenty years afterwards, speaks of them as being cultivated in the fields every where in England, as well as in the gardens.

Turnips were cultivated in Hampshire, Berkshire, and Leicestershire, in the years 1698 and 1699. Mr. Lisle informs us, that his men, who hoed his turnips, had made it their peculiar business for twenty years.

It has been supposed that they were introduced into England by Charles Lord Viscount Townshend, but on the authority of Lisle, who made his observations between the years 1693 and 1722, this seems to be an error. It is however probable, that that patriotic nobleman greatly improved the mode of cultivating them, as he had an opportunity of seeing them in much higher perfection on the continent, where he resided for some time, being ambassador extraordinary to the States General in 1709.

They were certainly not in cultivation, except for the table, at the end of the sixteenth century, and so little were they known in 1588, that Cogan, in his Haven of Health, affirms, "That although many men do love to eat turnips, yet the swine by nature do abhor them." Neither Gerard nor Parkinson takes the least notice of their being cultivated in the fields. The former says, that small turnips were grown at Hackney, in a sandy soil, and brought to the Cross in Cheapside by the women of that village to be sold. In Scotland they were first cultivated near Stonehive, by Robert Barclay, Esq., of Urie, as an article of field-culture, and that enlightened gentleman brought the cultivation of them to very great perfection during his lifetime.

The sorts cultivated are, the early white Dutch, early stone, common round white, large round white, yellow Dutch, Aberdeen yellow, Maltese golden, green topped large round white, red topped large white, tankard, French, small round French, Swedish yellow stone, and black Russian. Of these, the two former are the best for early crops, and with the addition of the third, and yellow Dutch, and Aberdeen yellow for winter use, are quite enough for any ordinary garden. The Maltese golden is a handsome root, and it would be advisable to grow a few of them; as also of the Swedish, when transplanted for spring use, as affording a fine supply of greens as well as good roots. Where it is convenient to have turnips from the fields, it is better not to occupy the garden-ground with them for winter supply, as those from the fields will be found of a much better flavor.

SYSTEMATIC CATALOGUE

OF

CULINARY ROOTS AND HERBS,

ENUMERATING THEIR DIFFERENT SPECIES, AND PRINCIPAL VARIETIES IN GENERAL CULTIVATION; WITH THEIR NATIVE PLACE OF GROWTH, IF INDIGENOUS; AND IF EXOTIC, THE TIME OF THEIR INTRODUCTION INTO THIS COUNTRY.

Artichoke,—*Cynara Scolymus*, (*Linn.*)—belongs to the class and order *Syngenesia Æqualis*, and natural order *Cynarocephalæ*. Is a native of the south of Europe, and introduced in 1548. There are only three varieties in general cultivation. The French or oval, the globe, and the dwarf globe; of these, the globe is considered the best for general crops, but the French is supposed to be better flavored. The latter is only a sub-variety of the globe, and valued as occupying less room than any of the others, and is therefore to be preferred for small gardens. Artichokes are used in almost all families, and are in much repute on the continent, entering in a variety of ways into French cookery.

Artichoke, Jerusalem,—*Helianthus tuberosus*, (*Linn.*)—belongs to the class and order *Syngenesia Frustranea*, and natural order *Corymbiferæ*. Is a native of Brazil, and introduced in 1617. The *epithet* Jerusalem is merely a corruption of the Italian word *Girasole*, (from *girare*, to turn, and *sol*, the sun,) or sunflower; the name artichoke is given to it from the resemblance in flavor which the tubers possess to the bottoms of artichokes. Before the introduction of potatoes, this root was in high repute. In the reign of Charles the First, Virginian potatoes (our common sort) were rare; but Canadian potatoes (our Jerusalem artichokes) were in common use. They are used for a winter and spring dish.

Balm,—*Melissa officinalis*,—belongs to the class and order *Didynamia Gymnospermia*, and natural order *Labiatæ*. Is a native of Switzerland and the south of France; was introduced in 1573. It is now little used in culinary preparations, but still retains its rank as a medicinal plant. It affords a grateful beverage in fevers, and is used in the making of balm tea.

Burnet,—*Poterium sanguisorbia*, (*Linn.*)—belongs to the class and order *Monœcia Polyandria*, and natural order *Rosaceæ*. Is a native of Britain, found abundantly on chalky downs. The leaves are sometimes used in salads, and occasionally in soups. It continues green all winter, but is now little used. It has been recommended to the attention of the agriculturist, as food for cattle.

Brook-lime,—*Veronica Beccabunga*, (*Linn.*)—belongs to the class and order *Diandria Monogynia*, and to the natural order *Scrophularinæ*. Is a native of Britain, growing in every rivulet. The young tops are used like water-cresses for a salad, being more mild and more succulent, and only slightly bitter in taste. They need not be cultivated, at least in a garden, for a very little attention will procure an ample supply in any stream, where they grow naturally.

Chive,—*Allium Schænoprasum*, (*Linn.*)—belongs to the class and order *Hexandria Monogynia*, and natural order *Asphodeleæ*. Is a native of Britain, and sometimes found in meadows and pastures. A small bed is sufficient for any family; the young tops are cut, and mixed with salads in spring. The peasantry make a favorite dish of them, chopped small, and mixed with oatmeal into a sort of pudding. The French use them as seasonings to omelets, soups, &c.

Camomile,—*Anthemis nobilis*,—belongs to the class and order *Syngenesia superflua*, and natural order *Corymbiferæ*. Is a native of Britain, found in pastures. There are two varieties cultivated, the single and double flowering. The former, like all other single flowers, are the best for medicinal purposes; but the latter are most generally cultivated, as they afford a greater weight and quantity. They are highly useful in domestic medicine, and ought to have a place in all gardens, where they may either form a bed, or be planted for edgings, for which they are well adapted.

Costmary,—*Tanacetum Balsamita* (*Linn.*); *Balsamita vulgaris*, (*Hortus Kewensis*,)—belongs to the class and order *Sengynesia superflua*, and natural order *Corymbiferæ*. It is a native of Italy, and introduced into this country in 1568. It is a highly aromatic herb, and its name, Costmary, intimates that it is the *costus*, or aromatic plant of the Virgin. It is but seldom used in this country for culinary purposes, and therefore is rarely to be found in kitchen-gardens. It is still used in France, and other parts of the continent.

Cress, Water,—*Nasturtium officinale*, (*Hortus Kewensis*),—belongs to the class and order *Tetradynamia siliquosa*, and natural order *Cruciferæ*.—It is a native of Britain, and found frequently in rivulets and ditches. Its cultivation was not attempted till of late years, but since 1808, it has occupied the attention of several persons, and we now see water-cresses cultivated in several places round London.

Elecampane,—*Inula Helenium*, (*Linn.*)—belongs to the class and order *Syngenesia superflua*, and natural order *Corymbiferæ*. It is a native of Britain, was formerly in great repute, and cultivated in almost all the village-gardens throughout Europe. It is, however, seldom cultivated at this time, except as a flowering-plant in the borders, but it still holds its place as a medicinal plant of alexipharmick virtues, and for which it was probably so generally cultivated.

Eschalot,—*Allium ascolonicum*, (*Linn.*)—belongs to the class and order *Hexandria Monogynia*, and natural order *Asphodeleæ*. Is a native of Palestine, found near Ascalon. Introduced into this country in 1633. Its roots are much used in culinary preparations, in the manner of onions and garlic.

Garlic,—*Allium sativum*, (*Linn.*)—belongs to the class and order *Hexandria Monogynia*, and natural order *Asphodeleæ*. Is a native of Sicily, the south of France, and also of Egypt, and was well known to the Egyptians long before the departure of the Israelites. It has been cultivated here since 1548. It is not very generally used in English cookery, at least in substance, but its flavor is communicated by steeping the cloves, as the bulbs are called, for a short time in the dish, and then withdrawing them. It enters more generally into French and Italian cookery than into the English. It possesses some medicinal virtues, for which it is cultivated.

Herb-patience,—*Rumex Patientia*, (*Linn.*)—belongs to the class and order *Hexandria Digynia*, and natural order *Polygoneæ*. Is a native of Italy, and introduced in 1573. Formerly this plant was cultivated as a spinach. It is now neglected, according to the opinion of Mr. Neil, "on account of the proper mode of using it not being generally known." It is still much used in Sweden as spinach.

Hop,—*Humulus Lupulus*, (*Linn.*)—belongs to the class and order *Diœciæ Pentandria*, and natural order *Urticeæ*. Is a native of Britain, growing in hedges, and cultivated to a considerable extent as an ingredient in the composition of beer. The young shoots were formerly used like asparagus, and are said to be pleasant to eat. They are occasionally to be met with in the market, under the name of hop-tops. The hop is only cultivated in the gardens as a climbing plant, either to hide disagreeable objects, or as a curiosity.

HORSE-RADISH,—*Cochleria Aromatica*, (*Linn.*)—belongs to the class and order *Tetradynamia Siliquosa*, and natural order *Cruciferæ*. Is a native of Britain, and is to be found in pastures, but more generally near villages, and in the vicinity of gardens. It has long been cultivated in our gardens, and is an article of considerable profit to the market-gardener. Its uses are generally known. The roots lose all their acrimony by drying, first becoming sweet, and then almost insipid. If kept in sand, in a cellar or other such place, the roots retain their acrimony for a long time.

HYSSOP,—*Hyssopus officinalis*, (*Linn.*)—belongs to the class and order *Didynamia Gymnospermia*, and natural order *Labiatæ*. Is a native of the south of Europe, and introduced in 1548. This is not the hyssop of the ancients. The leaves are sometimes used as a pot-herb, but their principal use is in medicine. Three varieties are cultivated, differing only in the color of their flowers, which are red, white, and blue. The blue is the original color, and the most often cultivated.

LAVENDER,—*Lavendula spica*, (*Linn.*)—belongs to the class and order *Didynamia Gymnospermia*, and natural order *Labiatæ*. Is a native of the south of Europe, and introduced in 1658. It is seldom or never used in domestic cookery, but is found in every garden, in which it is cultivated for its fragrant spikes, which are either dried, and kept in bags or small bundles, or distilled, and becomes then the well-known lavender-water of the shops. For this latter purpose, it is cultivated to a considerable extent, particularly at Mitcham, in Surrey, and Maidenhead, in Berkshire.

LIQUORICE,—*Glycyrrhiza glabra*, (*Linn.*)—belongs to the class and order *Diadelphia Decandria*, and to the natural order *Leguminosæ*. Is a native of the south of Europe, and introduced in 1562. The planting and growing of liquorice began about the beginning of the reign of Elizabeth. It is only cultivated on a small scale in the gardens, but on an extensive scale in the fields, for the use of brewers and druggists.

MINT,—*Mentha*, (*Linn.*)—belongs to the class and order *Didynamia Gymnospermia*, and natural order *Labiatæ*.—There are several species cultivated.

The *Mentha viridis*, spearmint, is the most generally used in culinary preparations, being an ingredient in salads, and imparting a flavor to several dishes, such as peas, sauces, &c.

The *Mentha pulegium*, pennyroyal, is used in different branches of cookery.

The *Mentha piperita*, peppermint, is less used as a culinary herb, but is more used for distillation, for which the other two are also cultivated.

POTATO,—*Solanum tuberosum*, (*Linn.*)—belongs to the class and order *Pentandria Digynia*, and natural order *Solaneæ*. The question as to the country, from which this invaluable root first proceeded, has been as much the subject of argument as the birth-place of Homer. It is supposed by many to be of South American origin. Baron Humboldt says, that it is naturalized in many places there, but he doubts whether it be indigenous. Messrs. Sabine and Lambert agree in its being a native of the western coasts of South America, and also that it is found both in elevated situations in the tropical regions, and in the temperate districts of the western coast. It is supposed that potatoes were first brought into Europe by way of Spain, about the beginning of the sixteenth century, from the mountainous districts of South America, in the neighbourhood of Quito. It was introduced into Italy from Spain. In the year 1598, Clusius received the potato into the botanic garden at Vienna, from the governor of Mons, who had received it the preceding year from one of the attendants of the Pope's legate, by whom he was informed, that it was then in use in Italy. Clusius cultivated, and disseminated it through Germany. Sir Walter Raleigh, or some of his attendants, are supposed to have brought it into this country, about 1586 from Virginia, and that it was planted by him on his estate of Youghall, near Cork, where it was cultivated and used, long before its value was known in England.

This excellent root was nearly condemned to destruction, by the apples or seed, which it produces, being by mistake taken for the eatable part. Fortunately, the spade discovered the real potato, and the root became rapidly a favourite eatable. It, however, long continued to be considered rather a species of dainty, than as an article of provision, nor was it till the close of the eighteenth century, that it was supposed capable of guarding the country in which it was cultivated from the horrors of a famine.

The potatoes of Shakspeare and other writers of his time, were not the potatoes of the present day, but the *Convolvulus batatus* or sweet potato, which were imported from Spain, and in use before the present potato was known.

> "Let it rain potatoes and hail kissing comfits."
> *Merry Wives of Windsor*, Act. V, Scene 5.

The potato appears to have been brought from Ireland to Lancashire, where it has been, perhaps, more successfully cultivated, than in any other part of England. Gerrard had them in his garden in 1597, and has given a figure of it in his Herbal, under the name of *Battata Virginiana*, and recommends the roots to be eaten as a delicate dish, but not as common food. They ought, he says, "to be either roasted in the embers, or boiled and eaten with oil, vinegar, and pepper, or dressed some other way by the hands of a skilful cook."

Parkinson says, that the tubers were sometimes roasted, and steeped in sack and sugar, or baked with marrow and spices, and even preserved and candied by the comfit-makers.

In 1663, the attention of the Royal Society was directed to the culture of the potato, and some measures were taken to encourage the more general cultivation of it on the score of national advantages. This measure brought the use of them to be more generally understood, but still they were held in no high estimation. Even after a hundred years had elapsed since their introduction, they were spoken of, as being only a root used by the lower classes in Ireland, sometimes as a substitute for bread, and occasionally boiled or roasted. Evelyn, who wrote in 1699, says "in your worst ground plant potatoes, and take them up in November, gather them ever so clean, still enough of the tubers will remain in the ground for a stock." Some of the writers on horticulture at a later period, take no notice whatever of potatoes, and others considered them less useful than either skirrets or parsneps. In Scotland, they were received and cultivated with enthusiasm, and they now form the chief support of thousands. At their first introduction, about the year 1725, which was as early as they were generally known in England, they were cultivated only in a few gardens in the vicinity of Edinburgh, and left in the ground for several years, and the few which were annually used were merely picked out of the ground as the occasion required, and the remainder were then covered with litter to protect them from the frost. It was not till after 1740, or probably 1745 or 6, that they were even known in the Highlands, and are said to have been introduced by the followers of Charles Stuart. They are now cultivated by the natives of the most remote isles, with a care and industry that are highly creditable to them, and the quality of the potatoes is superior to those grown in the south of Scotland, or in many parts of England, in more highly cultivated soils. They pay considerable attention to a change of seed and soil once every three or four years, by procuring tubers for planting from a distance. This circumstance, added to the potatoes being generally planted in what is called new ground, or that which had long rested, or probably never before been in cultivation, may be the cause of their superior quality, and the absence of that common disease called the *curl*. Potatoes grown in fields are generally much better than those cultivated in gardens. The consumption is now so great of this valuable root, that for the supply of populous towns, fields of considerable extent are annually under this crop, and probably few crops pay the grower better. In the county of Essex, in 1796, it was ascertained that no less than seventeen hundred acres were under this crop, and from the vast increase of population, in the vicinity of London, it is supposed, that the extent is increased in proportion.

The varieties, which are extremely numerous, in consequence of new ones being often produced by seed, and the disposition of them to assume different habits, when long grown in the same garden, or field, may be arranged under two heads, each differing principally in colour, and each class having numerous sub-varieties. For garden culture, the following are the most useful:—

Whites. Early manly, early champion, royal dwarf, American early, early ash-leaved, early dwarf, and early frame; bread-fruit, oblong white.

Reds. Red kidney, red oval, Irish red, American red, bright red, round purple or red, and speckled purple or red, red apple, black skin, Lancaster pink-eye.

Of the *whites*, the royal dwarf, early manly, and champion, are esteemed for forcing, equally with the ash-leaved, and early frame. The American early is good for a secondary crop, and the bread-fruit and the oblong white, for later crops.

Of the *reds*, the red kidney, and red oval, which are often confounded, are both good sorts. The bright red is much esteemed in the vicinity of Manchester, for a principal crop, as is the Lancaster pink-eye. The black skin and red apple keep well: the latter is the best keeper which we have. The speckled purple is esteemed in Scotland for a principal crop. The names by which potatoes are known are so arbitrary, every country and almost every town having their own names for them, and each having their favourite sorts, that a list of names would be of little or no use.

ROCAMBOLE,—*Allium Scorodoprasum* (*Linn.*)—belongs to the class and order *Hexandria Monogynia*, and natural order *Asphodeleæ*. Is a native of Denmark, and cultivated here in 1596. It is used by some as a substitute for garlic. It is not generally cultivated.

RUE,—*Ruta graveolens*, (*Linn.*)—belongs to the class and order *Decandria Monogynia*, and natural order *Rutaceæ*. Is a native of the south of Europe, and cultivated here since 1562. It is sometimes used as a medicinal herb, but never in the kitchen. It is supposed to have derived the name of rue from *rue*, to repent. It was called the herb of grace, from the circumstance of its being used by the priests, for sprinkling holy water among the people.

ROSEMARY,—*Rosmarinus officinalis*, (*Linn.*)—belongs to the class and order *Diandria Monogynia*, and natural order *Labiatæ*. Is a native of the south of Europe, cultivated here before 1548. It is seldom used in domestic cookery, but is occasionally used in medicine and distillation.

RHUBARB,—*Rheum*, (*Linn.*)—belongs to the class and order *Enneandria Trigynia*, and natural order *Polygoneæ*. Several species are cultivated in our gardens, principally for the foot-stalks of their leaves, which are used in tarts and pies. Rhubarb has only of late years been cultivated as a culinary vegetable, but so great is the present demand for it, that it is supposed that there are above 100 acres in the neighbourhood of London under this crop; and Mr. Wilmot, of Isleworth, alone sends it to Covent-Garden Market by a wagon-load at a time.

The *Rheum palmatum* is a native of Tartary, and was long supposed to be the true rhubarb, but Mr. David Don, librarian to the Linnean Society, has lately shown that the *Rheum Emodi* of Dr. Wallich, is the medicinal plant. The *Rheum palmatum* having hitherto been the supposed species. This has been attempted to be cultivated in this country for the supply of our druggists, but not with that success, which could be wished for so useful and safe a medicine. The Duke of Athol, some years ago, at the suggestion of the late Dr. Hope, of Edinburgh, carried the cultivation of this plant to a considerable extent, and his benevolent design was attended with considerable success. The roots, which he cultivated in the light sandy soils, similar to those of the Tartarian desert, grew to a considerable size, many of them were found to weigh fifty pounds, and to be equal in smell, taste, and effect, to those which we import at a considerable national expense. On being dried, they were found to shrink to one-quarter of their original weight. There is great reason to believe, that rhubarb cultivated in this country, is superior to that of foreign growth, the latter being gathered at all seasons, on account of the Mongall hunters, on their roûte, drawing up the roots indiscriminately, piercing them at one end, and slinging them on their belts; then leaving them to dry in their tents without further care. The scheme was ultimately abandoned by the Duke of Athol, and we believe has not since been attempted to any extent by any one else. It was introduced in 1758.

The *Rheum Rhaponticum*, is a native of Asia, and introduced here in 1573, and has been longer in cultivation than the others.

The *Rheum Hybridum*, is also a native of Asia, and introduced in 1778. This is considered the strongest growing species, and well calculated for culinary purposes, being more succulent than the *Rheum Rhaponticum*, and was brought into notice by Mr. A. Dickson of Edinburgh.

Rheum Tartaricum, is a valuable species, and requires no peeling in dressing; when cooked it is of a fine red colour, and continues to produce stalks longer than any of the other sorts.

Buck's Scarlet, as described in the Hort. Trans., is an excellent sub-variety, and well calculated for forcing.

SAGE,—*Salvia officinalis*, (*Linn.*)—belongs to the class and order *Diandriæ Monogynia*, and natural order *Labiatæ*. Is a native of the south of Europe, and introduced here before 1597. The leaves are used in a variety of forms in culinary preparations, and are employed often in medicine. Of this species there are several varieties; the red and green are the most common in cultivation; the others differ only in the size of their leaves, and are called broad and narrow-leaved sage. It is used in all families.

SAMPHIRE,—*Crithmum maritimum*, (*Linn.*)—belongs to the class and order *Pentandria Digynia*, and natural order *Umbelliferæ*. Is a native of our sea-coasts in particular places, such as Dover Cliffs and the Isle of Portland. Is used as a pickle, and sometimes as a salad. It has not been cultivated in the gardens with much success. The late John Braddick, Esq. attempted its culture, but succeeded only in a partial degree. It is not likely ever to become a plant of general culture. The *Inula Crithmifolia*, a native also of our sea-coasts, is used as a substitute for it, and is much more likely to be cultivated with success. The *Salicornia Herbacia*, another sea-side plant, is used for the same purposes, but not likely to become an inhabitant of our gardens.

SORREL,—*Rumex*, (*Linn.*)—belongs to the class and order *Hexandria Trygynia*, and natural order *Polygoneæ*. There are several species cultivated, and of them some slight varieties, differing in the succulency of their leaves, which is their principal merit.

The *Rumex Acetosa*, or garden sorrel, is a native of our meadows and pastures; has long been in cultivation, and is used in soups, salads, and sauces, and very generally on the continent as a spinach.

The *Rumex Scutatus*, or French, Roman, or round-leaved sorrel, is a native of

France and Italy, and cultivated here since 1596. It is used for the same purpose as the last.

Tansy,—*Tanacetum vulgare, (Linn.)*—belongs to the class and order *Syngenesia superflua,* and natural order *Corymbiferæ.* Is a native of many places in Britain. The young shoots and leaves are used to give flavor to puddings, &c. It is not now so much used as formerly.

Tarragon,—*Artemisia Dracunculus, (Linn.)*—belongs to the class and order *Syngenesia superflua,* and natural order *Corymbiferæ.* Is a native of Siberia, and cultivated here since 1548. It is used as a pickle, and for fish-sauce. In France it is employed, on account of its agreeable pungency, to correct the coldness of salad-herbs. It is also put into their soups and other compositions.

Wood Sorrel,—*Oxalis acetosella, (Linn.)*—belongs to the class and order *Decandria Pentagynia,* and natural order of *Geraniaceæ.* Is a native of Britain, growing in almost all woods, and appearing very early in spring. The leaves are an agreeable salad, either alone or added to other salad-herbs; and they communicate an agreeable flavor when boiled along with greens.

A TABLE,

Showing the Quantity of Seed or number of Roots necessary to Sow or Plant in any given space.

1. *Alisander,* or *Alexanders.* The seed is sold by weight; and if sown to transplant for a bed, three feet and a half wide by six feet long, half an ounce will suffice: if sown to remain in a drill, forty-eight feet in length, one ounce will be requisite.

2. *Angelica.* An ounce of seed will be requisite to sow a bed, from which the plants will afterwards be transplanted, of twenty-four feet square.

3. *Artichoke.* For a row at two feet apart, and four plants in each patch, of twenty feet in length, forty plants will be necessary.

4. *Artichoke, Jerusalem.* For a row of one hundred and twenty feet in length, the roots being placed at two feet apart, half a peck or sixty roots will be sufficient.

5. *Asparagus.* If sown to transplant, one quart of seed will sow a bed of thirty square feet. If sown to remain for a bed, four feet and a half wide by thirty feet in length, one pint is necessary. If plants a year old, a bed four feet and a half by thirty feet in length, to contain four rows, nine inches distant in the row, one hundred and sixty plants will be required.

6. *Anise.* One bed of twelve square feet will be sufficient for any family, for which half an ounce of seed is enough.

7. *Basil.* A quarter of an ounce will sow a seed-bed of four feet square, and when transplanted, fill a bed of forty-eight square feet.

8. *Beans.* For early crops, one pint of seed will be requisite for every eighty feet of row; for principal crops, two quarts for every two hundred and forty feet of row, and for late crops, the same as for early.

9. *Beans, French or Kidney.* For every eighty feet of row, the beans being at two inches and a half or three inches apart, half a pint will be sufficient.

10. *Beet, Red.* For every fifty feet of drill, one ounce is requisite.

11. *Beet, White.* The same quantity as the last, and so of the other sorts.

12. *Borage.* For a bed of twenty-four feet square, an ounce of seed is plenty.

13. *Burnet.* Half an ounce of seed will sow a bed of twelve square feet.

14. *Broccoli.* Half an ounce will sow a bed of forty square feet.

15. *Borecole.* All the sorts of these kales may be sown in the same proportion as the last.

16. *Brussels Sprouts.* One ounce will sow a seed-bed of forty square feet.

17. *Cabbage.* One ounce will sow a bed of forty square feet of the early sorts; for the more luxuriant sorts, one ounce will sow a seed-bed of sixty square feet.

18. *Capsicum.* A small paper, the produce of two pods of each sort will be plenty for most families.

19. *Cardoon.* For a trench of thirty feet in length, an ounce of seed is plenty.

20. *Caraway.* A quarter of an ounce is sufficient to sow a bed of twenty feet square.

21. *Carrot.* For a bed one hundred and twenty feet square, if sown broad-cast, one ounce will be requisite, and the same quantity for every hundred and fifty feet of drill-row.

22. *Cauliflower.* In the same proportions as broccoli and cabbage.

23. *Celery.* For a seed-bed of forty square feet, half an ounce is sufficient.

24. *Celeriac.* A quarter of an ounce is plenty for a bed four feet square.

25. *Chervil.* A quarter of an ounce is sufficient to sow a bed sixteen feet square.

26. *Clary.* A small bed, of about four feet square, will be sufficient for most families, for which a quarter of an ounce of seed will suffice.

27. *Coriander.* Half an ounce will sow a bed of twenty-four feet square.

28. *Corn-salad.* A quarter of an ounce is sufficient for a bed twenty-four feet square.

29. *Cress, Garden.* One ounce, or one-eighth of a pint, will sow a bed of sixteen square feet.

30. *Cress, American,* or *Black American.* If sown in drills, for every ten feet allow a quarter of an ounce.

31. *Cress, Winter.* The same proportion as the last.

32. *Cress, Curled,* or *Normandy.* The same as the last.

33. *Cress, Indian.* One ounce will sow twenty-five feet of drill.

34. *Cucumber.* From six to twelve seeds in each pot.

35. *Dill.* Half an ounce of seed is plenty for a bed twelve feet square.

36. *Endive.* For a seed-bed of forty square feet, half an ounce is sufficient.

37. *Egg-plant.* A small paper, the produce of two fruits, will be plenty to sow in most gardens.

38. *Fennel.* Half an ounce is sufficient for a seed-bed of twenty-four square feet.

39. *Finochio.* A variety of the former, the same proportion of seed as the last.

40. *Gourds.* From four to eight seeds of each variety, in separate pots, will be plenty for most families; excepting the vegetable marrow, where it is used, from twelve to twenty seeds will afford a supply.

41. *Kidney-bean.* See *Beans.*

42. *Leeks.* One ounce is sufficient for a bed of thirty feet square.

43. *Lettuce.* The seeds of lettuce require room; a quarter of an ounce is sufficient to sow a bed of forty square feet, and will produce upwards of four hundred plants.

44. *Love-apple.* A small paper of seed is sufficient for most gardens, or the produce of one or two fruits.

45. *Marjoram.* For a seed-bed of nine square feet, a quarter of an ounce is seed sufficient.

46. *Marigold.* A bed of sixteen square feet, will require a quarter of an ounce of seed.

47. *Melon.* From four to eight seeds in each pot, of No. 48 size; or double that number may be sown, if there be doubts of the goodness of the seeds.

48. *Mustard.* Sow in the same proportion as for garden-cress.

49. *Nasturtium.* See *Indian Cress.*

50. *Onion.* For every forty square feet, allow one ounce of seed.

51. *Parsley.* An ounce of seed will sow a drill fifty feet long.

52. *Parsley, Hamburg.* May be sown in the same proportion as the last.

53. *Parsnep.* Half an ounce of seed is usually sown on a bed of one hundred square feet.

54. *Peas.* For the small early kinds, one pint will sow a row of twenty yards in length; for the principal sowings of large sorts, the same quantity will sow thirty-three yards.

55. *Pompion.* See *Gourds.*

56. *Potatoes.* For a plot of the early and secondary crops, eight feet wide by sixteen in length, planted in rows fifteen inches apart, and nine inches in the row, a quarter of a peck of roots or cuttings. For principal crops, a compartment twelve feet wide by thirty-two in length, planted in rows two feet distant, and twelve inches in the row, half a peck of roots will be required.

57. *Purslane.* One-eighth of an ounce will sow a bed of sixteen square feet.

58. *Radish.* For each sort, a bed of fifty feet square, two ounces of seed will be required.

59. *Rampion.* Is not much used; and as the seeds are very small, one-eighth of an ounce will sow a bed of twenty square feet.

60. *Rape.* Sow in rather less proportion than for garden-cress.

61. *Savory, Summer.* A small paper, containing one-eighth of an ounce, will be sufficient for an ordinary-sized family.

62. *Salsafy.* One ounce of seed is sufficient for thirty feet of drill.

63. *Scorzonera.* The same as the last.

64. *Skirret.* The same as the last.

65. *Savoy.* The same proportion as cabbage, broccoli, &c.

66. *Sea-kale.* Two ounces will sow a seed-bed of thirty-six square feet; or, in drills, the same quantity will sow forty feet in length.

67. *Spinach.* Two ounces will sow a bed of one hundred and twenty square feet, if sown broad-cast; but if sown in drills, one ounce will sow the same space.

68. *Spinach, New Zealand.* Thirty or forty seeds will produce enough for an ordinary family.

69. *Spinach, Mountain or Orache.* One ounce will sow a bed of sixty square feet.

70. *Spinach, Wild.* Half an ounce will sow a bed of forty square feet, and will be sufficient for an ordinary-sized family.

71. *Succory,* or *Wild Endive.* Sow in the same proportion as for endive.

72. *Turnip.* Half an ounce will sow every hundred square feet.

A TABLE

Of the different Culinary Vegetables, with the Time of Sowing, Planting, and Mode of Propagation.

Plants, &c.	No. of crops.	Time of sowing or planting.	Mode of propagation.
Alexander	Two	March, August	Seed.
Artichoke	One	March or April	Suckers.
Asparagus	One	March or April	Seed or Plants.
——— forced	Many	Oct. Nov. Dec. Jan. Feb.	Plants.
Balm	One	March or April	Offsets, shoots, &c.
Basil	One	March or April	Seed.
Beans, early	Five	From Oct. to July	Seed.
—— late	Four	April or July	Seed.
Beets	One	February or April	Seed.
Boreeole or kale	Three	March, April, June	Seed.
Borage	One	February or March	Seed.
Broccoli	Four	Mar. Apr. May, June, and Aug.	Seed.
Burnet	One	March or April	Seeds and roots.
Cabbages, early	One	August or September	Seeds.
——— late	Four	February, March, May, June	Seeds.
——— red	Three	February, March, June	Seeds.
——— savoy	Two	March, May, June	Seeds.
——— for cattle	Three	May, June	Seeds.
——— for seed	One	October or November	Seeds.
Camomile	One	March or April	Parting roots.
Capsicum	One	March or April	Seeds.
Carrots	Three	Jan. Feb. March, April, July	Seeds.
Cauliflowers	Four	August, Feb. March, May	Seeds.
Celery	Five	Feb. March, April, May, June	Seeds.
Cardoons	One	March or April	Seeds.
Chervil	Two	March, August	Seeds.
Chives	One	March or April	Parting roots.
Clary	One	March or April	Seeds.
Coleseed	One	June or July	Seeds.
Coleworts	Two	February, June, or July	Seeds.
Corn-salad	Two	From March to August	Seeds.
Cress for seed	One	March or April	Seed.
—— for salad		March to September	Seed.
—— on hot-beds		October to March	Seed.
Cucumbers	Five	Jan. Feb. March, April, May	Seed.
——— on hot-beds	Three	January, February, March	Seed.
——— for bell-glasses	One	April	Seed.
——— on open ground	One	May or June	Seed.
Dill	One	March or April	Seed.
Endive	Four	April, May, June, July	Seed.
Fennel	Two	February, August	Seed.
Finochio	Four	April, May, June, July	Seed.
Garlic	Two	February, September	Offsets.
Horse-radish	One	February or March	Cuttings of the roots.
Hyssop	One	March or April	Seed or slips.

Plants, &c.	No. of crops.	Time of sowing or planting.	Mode of propagation.
Jerusalem artichokes	One	February or March	Roots.
Kidney-beans	Five	March, April, May, June, July	Seed.
Lavender	One	May or June	Slips and cuttings.
Leeks	One	February or March	Seed.
Lettuces	Seven	February to August	Seed.
Marjoram	Two	March, April	Seed or roots.
Marigolds	One	February to April	Seed.
Mint	One	March or April	Roots, offsets, and cuttings.
Mushrooms	Two	March, September	Spawn.
Mustard, for seed	One	March or April	Seed.
——— for salad		March to September	Seed.
——— on hot-beds		October to March	Seed.
Nasturtiums	One	March or April	Seed.
Onions, to draw young	Four	Jan. Apr. May, July, and Aug.	Seed.
——— principal crop	One	February or March	Seed.
——— for seed	One	February or March	Seed.
——— Welsh	Two	July, August	Seed.
Parsley	Three	February, March, July	Seed.
——— large-rooted	Two	February, April	Seed.
Parsneps	Two	February, March, or April	Seed.
Peas	Five	Oct. Jan. Feb. July, August	Seed.
Pennyroyal	One	March or April	Slips and roots.
Potatoes	Three	February, March, April	Cuttings of the roots and seeds: the latter to produce new varieties.
——— on hot-beds	One	January or February	
Purslane	Three	March, April, May	Seed.
Radishes	Nine	January to Aug. and Nov.	Seed.
——— on hot-beds	Two	January, February	Seed.
——— for salad		March to September	Seed.
——— for seed	One	May	Seed.
Rampion	One	March or April	Seed.
Rape	One	June or July	Seed.
——— for salad		March to September	Seed.
Rocambole	Two	February or September	Offsets and cloves.
Rosemary	One	May or June	Cuttings and slips.
Rue	One	March or April	Slips, cuttings, and seed.
Sage	One	March or April	Slips and cuttings
Salsafy	One	March or April	Seed.
Savory	One	March or April	Seed.
Scorzonera	One	March or April	Seed.
Skirrets	One	March or April	Seed.
Sorrel	Two	March, August	Seed and parting roots.
Spinach	Six	February to July	Seed.
——— winter	Two	July, August, or September	Seed.
Tansey	One	March or September.	Parting roots.
Tarragon	One	March or September	Roots, slips, and cuttings.
Thyme	One	March or April	Seeds, slips, and cuttings.
Turnips	Six	March to August	Seed.
——— for seed	One	February	Seed.
Turnip-cabbage	Two	May, June	Seed.
Turnip-radish	Two	From January to September	Seed.

THE

FRUIT GARDEN.

INTRODUCTION

TO

THE FRUIT GARDEN.

NEXT in importance to the cultivation of culinary vegetables is that of fruits. Fruits have attracted the attention of man from the earliest period, and are supposed to have been the first vegetable production on which he fixed as an article of food. Of all fruits cultivated, the apple and fig are the most ancient. The vine is next in order; the fruit of which not only served as food, but also as a beverage. The almond, vine, and pomegranate were cultivated in Canaan, and, with the addition of cucumbers and melons, were known to the Egyptians from time immemorial. The Romans, in the zenith of their glory, had the merit of not only introducing many fruits into Europe, but also of bringing many of them from Italy into Britain. After the Romans deserted this island, the fruits which they brought were probably either neglected or entirely lost, for we find many of them a second time re-introduced by the Norman conqueror, and also by Henry the Eighth; and during the dark ages, they were carefully cultivated by the clergy, who, William of Malmsbury informs us, not only planted orchards wherever they resided, but also vineyards, and made wine. Wherever a monastery has stood, the remains of fruit-trees may be found; the monks were generally good gardeners, and displayed great skill in the choice of situation for their orchards; indeed this choice often regulated the situation of the cathedral, for they seldom established themselves in situations unfavourable for the rearing of fruits.

William of Malmesbury says, that the grapes produced in the vale of Gloucester were of the sweetest taste, and made most excellent wines. These vineyards were the sole property of the great barons, the monks, and abbots.

Although we have no vestiges remaining of the vineyards of the monastic times, yet we have many specimens of their orchards, which are still, in several instances, in a productive state; and although Henry the Eighth, by destroying many of the religious houses, dispersed and humbled the clergy, still he was attentive to the cultivation of fruits, and in his long reign, many were introduced into this country, amongst which, we are informed, were apricots, melons, and Corinth grapes. This monarch, at his palace of Nonsuch, in Surrey, cultivated in a walled garden, the then astonishing number of two hundred and twelve fruit-trees. In the same reign, Derbyshire and Lancashire were both celebrated for orchards, and Gloucestershire and Herefordshire long before that period. About the beginning of the sixteenth century, Arnold's Chronicles appeared, in which the art of grafting, planting, and altering fruits, both in color and taste, are treated on, and it appears to be the first treatise on fruits, that this country has produced; although long before that period, the cultivation of them had been attended to, not only by the monks, but also by the Druids. About this time, Cardinal Pole introduced the fig; and the orange and pomegranate were also cultivated at Beddington. During the reigns of Elizabeth and Charles the First, fruits were much attended to. Charles the Second planted fruit-trees in his gardens at Hampton Court, Carlton, and in Marlborough gardens; and Waller, the poet, in alluding to the two latter gardens, describes the mall in St. James' Park, as—

"All with a border of rich fruit-trees crown'd."

Sir William Temple and Sir Henry Caple cultivated fruit-trees, both as standards, and trained on walls; Switzer describes the trees of the former as being exquisitely well trained and nailed; and the latter as having the choicest collection of fruits in England, as well as being the most skilful and industrious cultivator. In the seventeenth and eighteenth centuries fruits were multiplied and improved; and in the nineteenth, they appear to have arrived at a degree of perfection, which could not have been anticipated by our ancestors, while content with the fruits which our native land produced. To the exertions of Knight, Braddick, and others, we are indebted for many of our best fruits, and not only for the improvement of our native sorts, but also for the introduction of several foreign kinds.

The cultivation of good fruits requires the utmost attention of the gardener. The introduction of a worthless culinary annual, or perennial vegetable into a garden, is a loss comparatively trivial to the introduction of a worthless, or bad fruit-tree; the one only disappoints us for a season, the other for a number of years. The one can be rectified, perhaps the same year, if not, the succeeding one; but the other requires many years to arrive at that perfection, which will enable us to judge of its merits. The disappointment is therefore great, when we expect to be repaid for our trouble and anxious care for years, by seeing ourselves in the possession of a fine fruit, to find it at last a fruit of less merit than any other in the garden; yet nothing is of so frequent occurrence.

It is the fate of man to fall into error, and to overshoot the mark, when over-anxious in the pursuit of certain objects, and perhaps, in no instance, is the truth of this maxim more clearly exemplified than in the cultivation of fruits. It has become fashionable, and it appears to be the *primum mobile* of certain horticulturists, to cultivate varieties and sub-varieties of fruits beyond all reasonable bounds; many of which are disseminated over the country to the disappointment of hundreds. True it is, that new, or improved fruits, are only to be obtained by propagating many varieties, out of which those only of a superior quality should be chosen. This is a laudable pursuit in the horticulturist, and to many eminent and intelligent gentlemen and gardeners, we are indebted for their unwearied exertions in this particular branch of horticultural science; but it is to be regretted, that more attention and caution have not been exercised in distributing those sorts, which are of real merit, and consigning the less worthy to the fagot-pile. Collections of fruit seem now to be more appreciated, in proportion to their extent in the number of varieties, than in their actual merits. It is better to be contented with a few real good kinds, such as will be productive in most seasons, than to plant many sorts (even of those which are reckoned the finer) for the sake of variety, of which a crop is obtained only once in three, five, or seven years. Existing circumstances should determine both the sorts and the number of varieties planted. In fine climates, soils, and situations, such as many parts of Devonshire, Somersetshire, Herefordshire, and Worcestershire, and in some situations in the vicinity of London, the finer sorts may be expected to repay and amply satisfy the proprietor; while to plant the same sorts in cold bleak situations and bad soils, would be attended with disappointment. The circumstances of the situation being taken first into consideration, the number and sorts should then be fixed upon, and out of the almost endless catalogue of fruits now to be had, sorts will be found to suit all reasonable situations; the chief difficulty, however, consists in making a proper selection. Few private gardens should contain more than twenty-five or thirty sorts of apples, twelve or twenty sorts of pears, and so in proportion with the other small fruits, such as strawberries and gooseberries excepted, as they occupy little room, and are soon in that state of bearing as to convince the owner whether they be or be not really worthy of his cultivation.

By limiting the varieties of fruits in private gardens, we may be accused of wishing to cast a damp on the zealous efforts of the present cultivators of new and improved fruits; but this is quite foreign to our views; indeed, we consider no stimulus too great for promoting that laudable object, which every horticulturist should constantly bear in his mind; but still this aim should not be carried to the extent of depriving the proprietor of a supply of standard fruits, sufficient for the consumption of his family. A great neglect has been shewn, of late years, in the planting of many of our best standard fruits, and in some cases, they are totally banished from the garden to make way for new ones, the merits of which are scarcely known, having been raised from seed imported from the continent, or recommended by some enthusiast with a

Flemish or French name, which is, perhaps, the only thing that can be said in their favor. And thus, we find many gardens, which once were noted for the quantity and excellence of their fruits, now scarcely having one out of some hundred sorts, which is fit to eat, and in consequence, the owner is often obliged to apply to the nearest fruiterer to complete his dessert. We would recommend to all, who have it in their power to propagate from seeds of approved sorts, particularly if they have been assisted in the important office of impregnation, by destroying carefully the pollen of one sort, and introducing that of another, as the most likely means of producing a variety participating of the good properties of both; and, when the young plants are of sufficient strength, to plant them out in some favorable situation in the shrubbery, or otherwise, until they prove by their fruits whether they do or do not deserve a place in the garden. By judiciously arranging them in the shrubbery or arboratum, they will harmonize with the other trees, and, at certain seasons, produce an agreeable effect, either by their flowers or their fruit. Those which are likely from their habit, to be approved of as distinct sorts, may be brought to fruit sooner by grafting, or budding them upon an established tree. It will happen, in most gardens, that a particular sort may have been by accident planted, the fruit of which may be of little value; in such cases, let this tree be fixed upon for a stock, on which to work any of the seedlings, that it may be desirous, from their appearance or other causes, to be proved, sooner than they would be by remaining on the seedling tree. By this method, a great many may be proved annually without the least inconvenience. The necessity of renewing fruit-trees by seed, for the purpose of either renewing the identical sort, or endeavouring to procure a new or a better one, is obvious, as the various methods of propagation by grafting are, in no instance a renewal of the sort, or, in other words, making a new or young tree, for the case is wholly different. Every tree so propagated is no more than a prolongation of a part of the parent tree, by being amputated, and made fast to another root by means of grafting. There is no such thing as a new or young tree, excepting those, which are really raised from seed. Every Ribston pippin in the kingdom, propagated by any other means than by seed, is no other than a part, a wing or a branch, of the original Ribston, discovered at Ribston Hall, in Yorkshire, and that such trees, it is supposed, do not only inherit the properties of the parent in size, shape, and flavor, but they also inherit all the train of diseases with which the original was affected. This is an important consideration, and deserves the most serious attention, as we see many of our old and standard fruits fast hastening to decay. Mr. Knight and others have discovered this in the Herefordshire orchards, in which many of the esteemed fruits, and which were really good one hundred years ago, are now scarcely so good as the wild apple in the hedges. Apples removed from one country to another are sometimes materially improved by the removal; thus, the Balgon pippin, an esteemed Scotch apple, similar to the golden pippin, is supposed to be nothing else than the golden pippin imported from England, about the period when that fine apple was in its prime. The case is the same on the opposite side; the Ribston pippin, originally brought from England into Scotland, is there one of the finest apples in the country, and deserves a south wall in many places, much better than some of the inferior peaches; while, on the other hand, when it has been again brought into England, it is not to be compared to many even of the third rank of merit. Although the Hawthorndean may be an exception to this rule, it is an excellent Scotch kitchen-apple, and is the same in the south of England. Many of the old apples and pears now growing in the old monastic orchards, appear to us to be of little merit, and we generally content ourselves with the idea, that they may have been esteemed by a monk of the twelfth century, because he had no better; but, at the same time, it is probable, that the same apple or pear was then little inferior to our Jargonelle, or summer Boncretien. We have had an opportunity of observing an instance of this kind, in the garden of the clergyman of Kenmore, in Breadalbane, in which there is a Jargonelle tree of huge dimensions, and which probably has been a scion of one of the trees in the orchard of the nuns of Loch Tay, which is contiguous to it. This tree continues to bear a great crop of fruit annually, but even in the remembrance of several people still living, it has so much degenerated, as to be very unlike to what it was in the early part of their remembrance. We meet with few good pears among the many old trees existing in those old orchards, but we may reasonably satisfy ourselves that they were fruits of great merit when in their prime. The most probable cause of this degeneracy is their having stood for many years upon the same spot, and, by the absorption of their roots, annually exhausted that nourishment, which is destined by nature for them, to which it may be added, that no fresh food is supplied them by the addition of manures, or other matters containing the necessary food of plants. It is probable, if some fruit-trees were supplied, as occasion required, with proper food, they might live as long as the poet has ever supposed the oak to live. We observe in the lower orders of vegetables, that change of place is necessary for them; a plant whose roots are prisoned within a pot, soon exhausts all the nutriment in the ball of earth that surrounds the roots, and when that is the case, it soon ceases to flourish; but if re-potted, and fresh mould given it to live in, it soon shows the change by assuming its wonted luxuriance. Hence we see the necessity of choosing good soil, either naturally or artificially made, for our fruit-trees.

CHAP. I.

SITUATIONS AND SOILS FOR FRUIT-TREES.

Fruit-trees are planted either for the supply of the proprietor's own table, or on a larger scale for profit, by disposing of the produce in the market, or in making the well-known liquors, cider and perry.

Plantations of fruits for the latter purposes may be considered under the same head, as they are for the most part cultivated in what is generally called an orchard, and the sorts are neither so select nor so well cultivated. Those for the former purpose are cultivated on a less scale, and the selection of fruits is usually more limited, and is generally understood by the appellation of the fruit-garden.

With respect to the situation of public orchards, it should be rather elevated than low, as on a gentle declivity, inclining to the south, a free admission of the rays of sun and air is obtained, which is requisite to dry up the damps, disperse the fogs, render the trees healthy, and give a fine flavor to the fruits. It should be likewise well sheltered from the east, north, and west winds, by plantations, if not naturally sheltered by hills or rising grounds. Many orchards are admirably situated by the sides of rivers, sheltered by the winding banks, and sloping to the south, east, or west. Where plantations are necessary for shelter, they should not be either too high, nor too near the orchard, as where that is the case, they prevent a free circulation of air, which is of as much injury to the trees as if they were not sheltered at all. The soil is of more importance probably to the welfare of the trees, than any particular shelter, excepting in very bleak and exposed places. In the cider counties, we see orchards, in all situations as regards shelter, thriving almost equally well; we often see them on the tops of hills exposed to all the winds that blow; we see them in valleys sheltered from every wind; yet both seem to pay the proprietor to his satisfaction, or else they would be soon rooted up. No rule can be laid down to specify exactly the soil most suitable for fruit-trees, neither is it to be supposed that every one, who wishes to plant an apple-tree, has that choice in his power. There is no doubt that certain soils are more fitted for the cultivation of fruit-trees than others; hence we find orchards thriving in soils not considered by any means good; while, on the other hand, we find, in soils supposed to be excellent, that they will scarcely flourish at all. In those situations, where fruit-trees are observed to thrive, cultivation ought to be extended; and in those which are found from experience to be unfit for them, they should not be attempted, at least with the intention of making them a source of profit in trade. The majority of fruit-trees will thrive in a loamy earth of a middling texture, providing it lie on a wholesome substratum, and be of a competent depth. We frequently meet with an excellent situation for an orchard, where the soil is various; where some is good, and some is very indifferent; in such cases, we must either improve the bad soil, or in planting, suit the different kinds of fruits to the nature of the different soils contained in the intended orchard. It would be a fruitless task to plant where the bottom is not naturally dry, or capable of being made so by draining. Wet, heavy, stubborn soils, are to be avoided, equally so with soils which are of a light, sandy, sterile nature. The shining gravelly soils disagree very much with fruit-trees, unless there be a good quantity of loam intermixed with them. On a soil rather shallow, and on a chalky bottom, they seldom succeed; and where the bottom is a cold spongy clay, they seldom thrive. But where such is the case, and other circumstances combining, the ground may be prepared by trenching, and elevating the stations for the trees above the general level, which will in a great measure secure their roots for some time from penetrating into the noxious sub-soil. When trees are planted in such situations, the roots may be prevented from extending to an unnecessary depth, by placing rough pavement under them, or laying a floor of brick, or forming one of clay and coal-ashes, allowing both to be pretty dry before the trees are planted. To each tree planted may be given three or four wheelbarrows full of good surface-mould, which has been prepared for them for some previous months by frequent turning and exposure to the atmosphere. Dung should be avoided in all cases, unless the soil be very poor indeed, and then it should be of the rottenest description, as nothing tends to produce canker and gum so much as strong dung, although we see it practised daily by many who, in other respects, are excellent fruit-growers. In regard to the size of an orchard, that must be regulated entirely by the use for which it is intended, as well as the quantity of fruit expected; also the quantity of cider or perry intended to be made; and the extent of ground fit for the purpose, or which can be conveniently spared.

SEASON OF PLANTING.

In regard to the season of planting, it may be performed with success at different periods, according to the nature of the land. The best time for planting dry soils is in October; but if in wet soils, the end of February or March is better. The chief principle in this business is to suit the trees to the soil, and to plant them at proper distances from each other. Fruit-trees, when planted too thick, are supposed to be liable to blight, and become overgrown with various species of *lichens*, and other mosses, particularly the family of *Ramalina*, which are the most injurious to, and the most frequent on fruit-trees, and are supposed to rob them of their nourishment, but this is not satisfactorily proved; on the contrary, it rather appears that they live on the moisture of the atmosphere, which is always the case where trees are closely crowded. The circumstance of *lichens*, and other mosses, living and growing on the hardest granite, and even on iron, is an argument against their robbing the trees of any share of nourishment. As their roots are very minute, and incapable of insinuating themselves into the bark of trees, it is probable that they do not extract their nourishment from them, at least not to such an extent as to injure them. Their appearance on fruit-trees is more rationally accounted for on the following grounds. We never see parasitic plants of the *Cryptogamous* class growing on trees in a truly healthy state, but we uniformly find them abounding on trees which are more or less in a state of sickliness, and approaching to decay. The more unhealthy a tree is, and particularly if its disease have been brought on by being shaded, so as to prevent a free circulation of air, the more profusely will it be found to be covered with innumerable species of mosses and fungi.

The tree must be already diseased, and the pores of the epidermis closed up, and transpiration obstructed, before it can be in a fit state to become the place of growth of those vegetables. The juices of the trees must be first vitiated, from some cause or other proceeding from the soil or situation, and the blight or mildew, which is a very minute parasitic fungus, then makes its appearance, and as the tree becomes more diseased, the more profusely will the fungi appear. The blight was well known to the ancient Greeks, but they were totally ignorant of its cause. They regarded it merely as a blast from heaven, indicating the displeasure of their offended Gods, and that it was perfectly incurable. The Romans also knew it under the denomination of *rubigo.* They regarded it in the same light as the Greeks, and supposed it under the immediate direction of RUBIGUS, one of their gods, whom they always invoked, that the blight might be kept off from corn and trees. It is at the present time well known both to the agriculturist and gardener, and has been very differently accounted for; indeed, in proportion as words have multiplied upon the subject, the difficulties attending its elucidation have increased.

PROCURING THE TREES.

In providing trees to plant an orchard, it is well to choose them from some eminent fruit-tree grower, as less risk is run in being deceived in the sorts; and in making a selection, it is better to be content with fewer sorts, provided that they be good, than to introduce a number, and then to have to grub up one half of them, when they have arrived at maturity. It is of importance to choose them from a soil similar to that in which they are to be planted, or as near to it as can be obtained, but if it be a worse soil, so much the better. Trees are found to thrive best that have been grown on a poor soil, when they are removed to a better; and trees grown in a rich soil, when transplanted into a worse, seldom recover the change. Care should be taken to choose such as are, to all appearance, free of canker, or which are not bruised or damaged. They ought to be chosen the summer before planting, and then carefully examined to see whether they be affected with insects, which, if it be the case, they should by all means be rejected. It is always better to pay double price for clean healthy trees, than take those which are unhealthy even as a gift. If the orchard, which is generally the case, is to be ultimately pastured with cattle, choose standards having clean straight stems of four or five feet in height; the apples being wrought on crab-stocks and the pears on free-stocks, and commonly such as are one or two years from the graft. In this instance, the Herefordshire orchardists commit an error, by planting trees often five, six, or more years from the graft, expecting thereby to have them in fruit sooner, and that they will not be so liable to be injured by cattle; but they would be more successful if they planted younger trees, and were at more trouble in protecting them, not only while young, but also when they are fully established. Care should also be taken, in taking them up, that their roots be not bruised nor twisted, and that they be carefully packed, if sent to a distance.

PLANTING THE TREES.

In regard to the proper distance for planting the trees, it should be regulated by the natural growth or spreading of them when fully grown, as well as by the goodness of the soil. It was formerly the practice to have them planted in lines of not more than eight or ten yards apart, but latterly they have been justly planted at a greater distance. From thirty to forty-five feet is the distance given in most of the cider counties; but this ought to be regulated by the soil and sort of trees. If planted in a cold, bleak, exposed situation, and in a poor soil, where the trees are not expected to grow to a great size, twenty-five or thirty feet are sufficient; whereas in a good soil, and sheltered situation, a distance of forty or forty-five may not be too great.

Cherries and plums may be planted at from twenty to thirty feet, according to the soil and the goodness or badness of the situation. But it is advisable, in the first planting, to plant four trees for one that is finally to remain at the above distances, planting the proper kinds at the distances as above-mentioned, and then the temporary plants between them each way, which temporary plants should be some of the freely growing sorts, that fruit early, such as the white or Caswick codlin, white Hawthorndean apples, May-duke cherries, and Crawford and other early fruiting pears; or any others known in the country where the orchard may be planted, that will fruit as early, if not earlier, than those just mentioned. These should be considered and treated as temporary plants from the beginning, and must give place to the principal trees, as they advance in growth, by being pruned away by degrees, and at last grubbed up entirely. In bleak and exposed situations, there can be no objection to introduce a few forest-trees judiciously among the fruit-trees, to shelter and nurse them up; the forest-trees to be cut away by degrees as the others get up, and ultimately taken away altogether. In this operation choose those which are of most rapid growth, such as poplars, plane, &c.; round the boundary of the orchard, Scotch geans, a small sort of hardy cherry, filberts and other nuts, quinces, service-trees, &c. should be planted; and to these, walnuts and chesnuts should be added: they will of themselves form a good shelter, and will by their fruits pay well for the ground which they occupy. Medlars, mulberries, &c. should be added to the other fruit-trees in the orchard, and all sorts of fruits that will ripen upon standards. In the process of planting, at whatever season of the year, and in whatever soil, care should be taken to have a sufficient quantity of puddle made, by pouring an adequate quantity of water upon the ground, and by stirring it about, so as to make a puddle of rather a thick consistency, through which gently draw the roots of the trees two or three times, or as often as necessary, until the roots be covered well with the puddle. This will be of much service to them, and will not only keep the roots moist, but will greatly encourage the emitting of young roots immediately after planting. Where this is not done, the same end will be obtained by giving a supply of water to the roots, as the mould is put about them in the process of planting. As soon as the trees are planted, they should be prevented from being blown about by the wind, by being supported by proper stakes or other props, for where this is not attended to, much injury is done to the young tender fibres; the ground is also opened by the stem pressing the mould away on all sides, thus leaving a hole, by which, in the first place, too much wet penetrates to the roots of the tree, and the frost succeeding, freezes the whole into a solid mass; its expansive power tears and lacerates the roots, and in spring they will ultimately be destroyed by the sharp drying winds. More trees, both fruit and forest, are destroyed by not paying sufficient attention to this point, than by any other cause whatever. Great care, however, must be taken in staking up the trees to prevent rubbing, for the friction produced by the tree rubbing against the prop will soon lacerate and bruise the bark, canker follows, and the tree is ruined. To guard against this evil, a piece of old mat or a small bundle of soft hay should be introduced between the stem of the tree and its prop, and the whole neatly tied together with a piece of tarred cord, taking care not to tie the cord too tight, which would prevent the stem from swelling. In situations where hares or rabbits are likely to get in to injure the trees, care must be taken to protect them from their attacks. Many modes have been adopted to preserve the stems of trees from these animals, but the most effectual and surest method is to clothe the stems with an envelope of moss, short grass, or litter, wound round with shreds of matting or rope-yarn; this not only protects them from hares, but is of great use the first year after planting, to keep the bark moist, and thereby aid the ascent and the circulation of the sap in the alburnum. This operation should be performed immediately after planting, and left on till by decay it drops off of itself: it is of singular service in late planting, or when, from unforeseen circumstances, summer planting is necessary. When this envelope drops off, and exposes the stems again to their attacks, let it be a rule, before the approach of winter, to bush them round with thorns, which will, if properly effected, preserve them, and will not injure them; or they may be again bound round with hay-bands, from the surface as high as it is likely that the animals can reach; this, if properly put on, will remain for two years. In a few years the trees will be sufficiently proof against them, unless in very severe weather. The first summer after planting, the young trees should be occasionally supplied with water according to circumstances; and this should be administered with a bountiful hand. In order to prevent as little of the water being wasted as possible, make a basin or hollow round the stem of each tree, which will contain the water until it soaks down to the roots. Fill this basin with littery dung to the thickness of five or six inches, and to prevent its being blown about, cover it with a little mould. This nourishes the young roots, by preventing the drought from penetrating to their injury. It is also of consequence to cover the ground round the roots with long littery dung or fern, in order to prevent the frost from reaching the roots, during the first winter after planting, that is, if they have been planted in autumn; after the first year this need not be done. In planting all sorts of trees, particularly fruit-trees, great care should be taken not to plant them at too great a depth. In good soils it is injurious to them, as it buries their roots so deep, as to be beyond the reach of the rays of heat, and induces them to go deeper for that nourishment which they can only find near the surface. Almost all roots are disposed to run to a certain degree horizontally, and if planted too deep, they can never approach near enough the surface, where their nourishment is prepared for them. In bad soils, it is better to plant upon the surface, or nearly so, and gather the mould round into a hill, which, by being increased as the tree advances in growth, will materially promote its welfare, by supplying it with fresh nourishment as the roots diverge from the centre. In planting extensive orchards, there can be no objection to cultivating the ground between the rows of trees; care being taken, for the first years of their growth, that no injury be done them by the plough or spade. Such crops as potatoes and turnips will rather benefit the trees than otherwise; for the operation of preparing the ground for such crops will ameliorate the soil, and tend to improve the trees: the trees should not be planted promiscuously, those of high lofty habits should be planted upon the elevated spots, or be planted by themselves to form a sort of back ground, and the less lofty sorts in the middle, while the lowest of all should occupy the front.

The trees when planted in this manner will have a fine effect when grown up; but if they be planted promiscuously, they will not appear so agreeable to the eye, independently of which the smaller trees will be shaded by the larger ones, which will not only injure them, but spoil the flavor of the fruit. The trees, where cattle are allowed to pasture, should be protected from their browsing, or rubbing against their stems, particularly when young, by placing a triangular fence round each tree, and a few branches of thorn drawn through their upper rails. That curious plant *Viscum album*, the misletoe, is very injurious to many apple-trees in countries where it abounds. It should be eradicated wherever it appears, for if not attended to, it grows so rapidly as to shade the fruit, and prevent the necessary circulation of air among the branches.

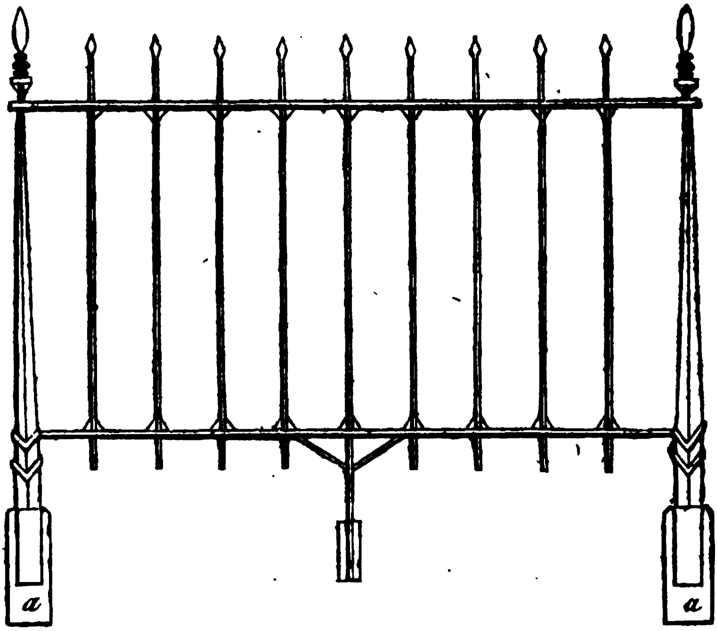
CHAP. II.

THE PRIVATE ORCHARD OR FRUIT-GARDEN.

SITUATION AND SOIL FOR THE PRIVATE ORCHARD OR FRUIT-GARDEN.

WITH respect to private orchards or fruit-gardens, it is often necessary, and always proper, to connect them with the culinary garden, provided circumstances will admit of it. In choosing the situation, in providing shelter, and improving the soil if it be necessary, more attention is required than in the orchard already described. There, only such trees will be introduced, as are known from their hardy constitution to be likely to bring their fruits to perfection without having recourse to artificial means; but in the fruit-garden the case is different, here, the finest and more tender fruits will be planted, many of which will require great skill and attention from the cultivator to bring them to any degree of perfection, and therefore we should be more particular in choosing a proper situation and soil. The most eligible situation for a fruit-garden, considered as such, may be placed upon any side of the kitchen-garden most suitable to the situation and nature of the ground, and according to convenience; or it may surround the garden, either simply as an orchard, or as an orchard and shrubbery or arboratum combined. Where economy is an object, and where there is not sufficient scope, perhaps the latter way may be the most advisable. Where there is plenty of room, a separate fruit-garden may be made on any side of the garden that may be considered most eligible, in which not only the larger sorts of fruits, such as apples and pears, are to be grown; but all others, such as cherries, plums, gooseberries, currants, raspberries, strawberries, &c., so as to obviate the necessity of crowding the kitchen-garden with them; indeed, such is our view of the case, that we should wish to see no fruits cultivated in the kitchen-garden, excepting on the walls, and probably strawberries in the quarters, as a resting crop for the soil. This sort of orchard should be so arranged as to produce a good effect when the whole are grown up. The larger trees should be arranged, as hinted at in the planting of public orchards; the ground may be here cultivated with culinary crops, which will increase the surface for that purpose, and give ample opportunity for resting the soil by having a certain proportion either under grass or summer fallow, as advised in the article on the rotation of crops. Under the trees, in hot sultry weather, many vegetables will prosper, which would not thrive so well if fully exposed to the full sun. Strawberries generally thrive in moderately shaded situations, as well as almost all other of the small fruits, shaded groves being their natural place of growth. The distance that the trees should be planted from each other must depend on the size of the ground, the sorts of trees planted, whether standard, dwarfs, or espaliers, the latter of which, though not commonly planted in orchards, deserves to be more particularly encouraged. Maiden plants, or such as are from two to three years from the bud or graft, should be preferred to older trees. The distance at which standard trees should be placed need not be more than from twenty to thirty feet. Dwarfs will require a little less, for as they will not be allowed that scope, as in public orchards, less room will be sufficient for them. Espaliers may be planted on iron or wooden trellices or railings, of from four to eight feet in height, and the trees should stand according to their kinds and mode of training. Apples, eighteen or twenty feet, if fan-trained, and from that distance to thirty, if horizontally trained; the latter is probably the better plan for low walls or espaliers; cherries from twelve to fifteen; pears from twenty to thirty; and plums from fifteen to twenty; planting the spaces between each with currants, gooseberries, or raspberries, as a temporary crop to be cut away as the trees extend their branches. The same should be done between the standards, if dwarf standards. In the rows should be planted, between each tree intended permanently to remain, such sorts of fruits as will come into bearing sooner than some of the more choice kinds; such apples as the white Hawthorndean, white codlin; and such pears as the Crawford or Lammas; May-duke cherries, Orleans plums, and such like, and if required, gooseberries and currants, or raspberries.

In planting espaliers in an orchard, choice should be made of that part which is the most sheltered from cutting winds, and most exposed to the rays of the sun, as espaliers are substitutes for walls, and which they so far resemble, that trees are regularly trained upon them, and thereby fully exposed to the light and heat of the sun, consequently are less liable to be injured by winds than standards. The fruits ripened upon espaliers are supposed to be intermediate in quality, between those ripened upon walls and standards; but to obtain this effect, they should always run from east to west, and may be extended the whole length of the orchard or fruit-garden, or run in lines parallel to each other at a distance of fifteen feet, so that the shadow of the one may not fall on the surface of another. Espalier-rails are either constructed of wood or iron, and are of different forms. Those of wood are in most general use, and so far as we know, are better than iron ones. The simplest kind, and which is much used in Scotland, is merely a straight row of stakes, driven into the ground at nine or twelve inches asunder, and from four to five feet in height, and joined and kept in a straight line at top by a rail of wood, or thin plate of iron, through which a nail is driven into the centre of each stake. If the wood used be larch, from trees which are cut out of the plantations in the process of thinning, the bark scraped off, and the ends, being charred, sunk in the ground, they will last for six or eight years, and often longer, and are perhaps the best sort of espalier-rail used, as the expense is trifling, and every purpose attained that can possibly be by such as are put up at a great expense, and will be out of repair in much the same time. Larch or other wood, with the bark left on, will last longer, but it has not so neat an appearance, as the bark after a time will come off in pieces. In a rustic or Swiss garden, we would recommend the bark being left on, as being more in character with the place.



Iron espaliers are in some places used; they resemble a common street railing. The columns or stiles may be either fixed into oaken blocks (*a a*); or, when this mode is not adopted, to form their base in the shape of a reversed ⊥, setting them on a foundation of brick-work. Such rails may be erected at something more, in regard to expense, than wooden ones, but as soon as the oaken blocks, into which they are fixed, begin to decay round their outer circumference, a vacancy is thus formed between the posts and the ground, which is daily increased by the shaking of the rail by wind, or other causes, and, in consequence, the rails soon get twisted, which is increased by the expansive and contractive property of the metallic matter, and in a few years becomes very unsightly.

This is one of the causes of the principal failure in all wire fences and all metallic erections founded on wooden bases.

Espalier rails are sometimes constructed of frames fitted with vertical bars, at eight or twelve inches asunder, and should be nailed on in preference to mortising, in order to preserve the strength of the upper and lower rails. The end stiles or uprights of the frame should be set on (*not in*) stone piers, and kept upright with irons leaded into the stone. Oaken posts, or larch charred, are set into the ground instead of stones, to which the stiles of the frames are attached, and if they be wedged round at bottom with small stones, or brickbats, they will last for some years. They are all to be painted some cheap color when put up, and this painting should be renewed once every four or five years. The best materials should be chosen for this purpose, as well as for all horticultural erections, and not any rubbish, unfit for other purposes, which we daily see done upon the principle of what is called economy.

There are many other forms of espalier rails, but all appear to possess some peculiar objection. The perpendicular is certainly the most preferable, besides having a more elegant and natural appearance. The horizontal espalier rail or table is objected to, because it constrains the trees into a form the most unnatural, and is the most unfavorable position to enjoy the rays of heat to advantage, as well as the loss of the surface of the ground under it. The oblique espalier rail is objected to, as only one side of the tree can enjoy any sun, and the other side is too much shaded, when running from east to west, and when from north to south can only enjoy half the day's sun.

Between every second or third line of fruit-trees in the fruit-garden, grass or gravel-walks should be made, for the convenience of gathering the fruits, or other necessary management, and the whole, in whatever shape it be constructed, should be surrounded with a walk of moderate breadth, separating the fruit-garden from the plantation for shelter, or other parts of the grounds. This plantation for shelter should be composed principally of fruit-trees of the more hardy kinds, such as filberts in front, and chestnuts, walnuts, &c. in the rear, intermixed with ornamental forest-trees and shrubs.

CHAP. III.

SELECTING TREES FOR THE FRUIT-GARDEN AND PLANTING.

As has already been noticed, a selection of good fruits is better than a long catalogue of names, the merits of which are not properly known. Future success depends upon a good selection, and the natural situation and soil are of too much importance to be overlooked. Such sorts should be preferred as are known for their merits, either for early ripening, fine flavor, long keeping, or other properties, which may be considered as most useful to the owner. A certain portion of all, which are possessed of these properties should be planted, but a smaller proportion of the first sort. In the lists of fruits given in this work, notice will be taken of the seasons in which they ripen, and the length of time that they will keep, and from them, a proper selection should be made. According to the instructions given in the article of public orchards, care should be taken to procure the trees from some eminent fruit-grower, as being less likely to meet with disappointment. Another important consideration is to have healthy trees, free from all appearance of *canker, gum, insects*, &c.; for this purpose, where it is found convenient, the selection should be made in summer, when most of their faults are more easily detected. It is a dangerous thing to introduce a tree infected with certain diseases, particularly such as are of the infectious sorts. It not only destroys the tree itself, but probably spreads over all the garden; and as a preventive is always better than a cure, it is better to avoid planting a tree under suspicious appearances. Presuming that the ground has been properly trenched, drained, and previously ameliorated, proceed at the proper seasons, either in November, for soils of a light description, or for soils of a strong and rather damp texture, in February or March, to plant the various sorts of trees, as has been directed in a former part of the work.

In situations where, from a variety of circumstances, it may be found inconvenient or impossible to devote a separate piece of ground for a fruit-garden, then the usual mode of introducing them into the culinary-garden must be adopted. There are many very excellent examples of fruit-trees having been introduced, either as espaliers planted along the sides of the walks, or as dwarf or half-standards, either along the sides of the walks, or in rows through the middle of the quarters. In both cases, they generally do well, for the ground having been previously made for the culinary vegetables, is generally pretty good for fruit-trees. Some give the preference to dwarf standards, some to espaliers, and others recommend a variety of stiff and unnatural forms of training, such as spiral-dwarfs, fusiform, conical, and concave or cup-shaped dwarfs. However fascinating these plans may appear, they are, like most of the French and Dutch modes of training, radically bad, and certain of defeating the object in view, namely, having fine fruit and healthy trees.

Espaliers, if well trained, either fan-formed, or which is more common, although less natural, horizontally formed, have a good effect in a kitchen-garden, and, by being planted from three to three and a half, or four feet from the walks, according to the size of the garden, will form an agreeable hedge or blind, by which the interior of the garden can be concealed. The narrow borders may be planted, according to fancy, either with flowers or strawberries; or dwarf-standards, or Buzzelars, may be planted along the sides of the walks with pretty good effect, if well kept, and produce a great quantity of fruit in most seasons. Tall standard-trees should be never admitted into a small garden, as casting too great a shade; neither should espaliers be above four or five feet high, nor dwarf-standards too thickly planted, nor be allowed to attain too great a height. From six to eight feet may be taken for the extreme height. In gardens of larger extent, the espalier-trees may be allowed from six to eight feet in height, but six feet will always have a better effect than if extended to a greater height.

CHAP. IV.

ON THE FORMATION OF BORDERS FOR FRUIT-TREES.

As the best sorts of fruit capable of coming to perfection in this climate are reserved for the walls of all gardens, and indeed the principal object in building walls round gardens is really intended for the production of fruits, which without them would not ripen in this uncertain and variable climate, and as fences of less expensive materials would answer every purpose of protection and shelter obtained from walls; the preparation of the borders next the walls should be attended to with more attention than is generally bestowed upon them. As our chief object is to produce fine fruit, we must first produce fine trees, and fine trees cannot be obtained in a soil not calculated for their growth. Where no objection exists to the expense of forming good borders, they may be made in almost all places; but where the expense is a consideration, they must be improved as far as circumstances will admit of; and where the expense is not to be incurred, nor the soil naturally good, then only such fruits as are suited to the ground should be attempted. It would be in vain to expect the finer fruits in a bad soil. Mr. Neill, an able Scotch horticulturist, observes in the Edin. Encyc. art. *Hort.* "On soils naturally very light, gravelly, and sandy, peach and nectarine trees do little good: it is better to plant figs or vines, which agree with such soils, and when trained against a wall, in a good aspect, will, in the southern parts of the island, afford excellent crops of fruit."

Peach and nectarine trees produce some of the finest fruits brought to the dessert, and the best walls of the highest cultivated gardens are reserved for their production. Next to them is the vine, but as few sorts of grapes, even in favorable seasons, ripen sufficiently well with us, any length of wall is seldom taken up with them. The fig is a tree equally tender with the vine, indeed more so, as in many situations the tree is not sufficiently hardy to resist some of our severe winters, while the vine is seldom injured; still the fig will mature its fruit under circumstances, where the grape will not ripen. The apricot is nearly allied to the peach, and will thrive in similar situations, indeed in such as are really not so good, and it seldom refuses to ripen its fruit in our most northerly gardens. Next in importance to these fruits are some of the finest continental pears and American apples. Plums and cherries will often succeed, where neither of the above-mentioned fruits will thrive. In preparing borders for those trees, we will consider them in the following routine: the peach, nectarine, and apricot. The two former are so nearly allied to each other, that it has been supposed by many, that they have sprung from one common origin, and therefore are only varieties of the same species. Linnæus considered them as one species, differing only in the one having downy fruit, and the other smooth. There are many instances on record of both peaches and nectarines growing on the same tree, and sometimes on the same branch. One instance is recorded in the Horticultural Transactions, of one single fruit partaking of the nature of both. The French consider them as one fruit, arranging them in four divisions, downy peaches with free stones, and downy peaches with cling stones; smooth peaches, or our nectarines, with free stones, and smooth peaches with cling stones; and many botanists consider the peach and almond as one species.

In preparing the borders for peach, apricot, and nectarine trees, the first consideration is to render the bottom perfectly dry by draining; indeed, this precaution ought to be taken to a certain degree, even where the bottom is perfectly dry, in order to guard against accidental floods of water, or a long series of wet weather in autumn, as their roots are very impatient of too much wet. Where the borders are to be well done, the natural soil should be entirely taken out to the depth under the ground-level of the wall, of thirty inches or three feet; the bottom should be rendered smooth, with a considerable fall from the wall to the walk sufficient to allow any water that may collect to run freely off towards the walk, under which should be a well-formed drain of the best materials the nature of the place can afford. Stones or flints are to be preferred, when they can be got; brick-bats are the next best for this purpose, or pieces of chalk which have not been exposed to the weather. Where neither of these is to be got, fagot-wood is to be used. Let this drain have a sufficient fall to carry the water either clear off to the outside of the garden, or else to some main drain, where it will be carried off with the other superfluous water, collected in the garden. Upon the bottom of the border thus prepared, lay some well wrought clay, which should be spread equally over the whole, three or four inches thick, sprinkling a little good lime amongst it; over this lay two or three inches of finely sifted coal-ashes, and let the whole be well incorporated by treading, and after partly dried, well rolled, until the whole form a compact solid floor. This operation should be carried on in dry weather, to admit of its drying quickly. This will form a compact floor, such as many barn and cottage-floors are composed of, and will not be readily penetrated by any roots that the trees may send down. The compost, which should have been preparing for some months previously, by being turned over and exposed to the air, should then be brought forward, and thrown into the border; if the soil that was taken out, were naturally good, and of a loamy nature, a portion of it may be again returned into the border, and well mixed with the new earth, and the border filled up a foot or fifteen inches above the intended level to allow for sinking. This should be all done through the summer, previous to planting the trees. The soil prepared for this border should be such as is often met with upon old sheep-downs, and of that sort generally known by the appellation of light rich loam, of a hazel color, and friable texture, crumbling to pieces in the hand, by rubbing, and containing a large portion of fibrous matter, or the rotted roots of plants. Such soil as this is anxiously sought for by the nurserymen for their green-house plants, and if good, is the best soil we have ever found for peaches, and will be sufficiently calculated to grow fine healthy trees without any compound whatever. If manure is to be added, from a supposition that the virgin loam is not rich enough, prefer that of decomposed vegetable matter, such as is generally called vegetable mould. Avoid, if possible, the addition of dung for those trees, as it only excites them to grow luxuriantly, and to imbibe nourishment too strong for their constitution, and ultimately bring on a train of diseases, arising, if we may so call it, from a too full habit. *Gums*, *cankers*, and other well-known diseases, derive their origin more from gross feeding than from any other cause, if we except accidental wounds.

When the mould is first brought from the downs, choose the top spit only, unless the depth of loam be uncommonly good; the surface is, however, the best, taking care to have all the turf or vegetable matter taken also, which, by undergoing decomposition in the process of turning, and amelioration, will greatly enrich the whole. If such earth cannot be got, which is often the case, search must be made for the best that can be found, and if too light, add a portion of stronger loam, or scourings of stagnant ditches which have been for some time exposed to the air to sweeten; blend the whole together, and if not sufficiently strong, add a portion of good garden-mould to it; but the more simple the preparation, the better will it be. If the mould be too strong, add a sufficient quantity of road scrapings, very rotten vegetable mould, with a small proportion of sand, which contains the least iron that can be got. If at any time, or in any case, in forming or renewing borders for peach-trees, the composition collected is not rich enough, which will seldom be the case, unless in a very poor soil indeed, and dung must be added, prefer the dung of cows or hogs to that of horses, as being of a more cooling nature, but in all cases, it should be rotten to a complete mould. Turf collected by the sides of roads, and loamy ditches cut up and well rotted, form of themselves a good soil for peaches.

Where this mode may be considered too expensive, let the borders be trenched over to the depth of at least three feet; and, in the process of trenching, remove from it all gravelly or clayey soil, both of which are hurtful to peach-trees, and in proportion to the quantity removed, substitute a like proportion of good loam, such as is described above. The better the borders are prepared in the first formation, the less trouble will they be in future, and instead of disappointment arising from want of fruit, and dead trees, the quantity of fruit, and health of the trees, will be in proportion to the care taken in the formation of the border, supposing all other circumstances to combine in their favor.

Vines will succeed in a soil that has a gravelly or dry bottom, and in other respects neither too rich, nor too strong, although vines will grow more luxuriantly, and produce larger fruit, in soils of a richer description, and for this reason, we are at much pains in preparing vine borders for such vines as are to be forced or grown in a vinery; yet, for such as are to be cultivated on the open walls or espaliers, we are convinced, from experience, that rather poor, or at all events light soils, are preferable. "The greater part of the vineyards of France, says an intelligent horticulturist, are on a soil (*argil-calcareous*), sometimes *primitive*, as those near Dijon; and sometimes *secondary*, as those at Bourdeaux. *Argillaceous gravel* is the next in frequency, as near Nismes and Montpelier, and that which produces the *Vin des Graves* of Bourdeaux. The excellent wines of Anjou are made from vines growing among *schistous* rocks. Wines, such as are made from vines planted in chalky soils, are weak, colorless, and do not keep so well as those of Champagne. Vines grown on the ashes discharged from volcanoes are excellent, as those of Vesuvius and Etna. Retentive clays are the worst soils for vines, the flowers are in a great part abortive; the fruit, if it sets, does not ripen; the shoots not ripening well are more easily affected by frosts; and the wine, if any can be made, is weak and worthless."

We have many instances of vines growing out of old walls, among lime-rubbish, and in almost pure gravel, producing excellent crops, and ripening their fruit, while others growing in rich soil, although much more luxuriant, and equally fruitful, do not ripen at all. This is, probably, carrying the merits of a poor soil to the extreme; it proves however, to us, that the drier and lighter the soil is for vines on the open walls, the more likely are they to ripen their fruit, and this is the chief object to be aimed at. Therefore, in preparing any part of a border for vines, a light soil upon a perfectly dry bottom is necessary to their ultimate success.

Figs will succeed in any tolerably light garden-mould, where the bottom is not wet. In preparing any part of a border for them, if the bottom be perfectly dry, or rendered so, any light loamy garden-soil will be sufficient. The principal failure of figs in this country arises from not choosing a proper situation for them, as far as regards the aspect, the best in the garden should be allotted to them and vines.

Pears.—A dry deep loam is the best soil for the pear-tree, when upon a stock of its own species, but on a quince stock, it requires a soil rather moister; however the bottom of the border should be dry. A gravelly bottom is good, provided there be sufficient depth of mould over it. A clayey, wet, spongy bottom is the worst of all, and should be guarded against by draining, and the bottom of the border secured by a floor, similar to that recommended for peaches and nectarines, or else a floor formed of pavement, or other durable materials, to prevent the roots, which are apt in this tree to penetrate to a great depth, from getting into a bad sub-soil. The border should be made good to the depth of three or three and a half feet, and composed of good hazelly loam from an old pasture, previously prepared, as already described for peach-trees. If the loam be not rich of itself, it should be assisted by the addition of a portion of well rotted dung, such as has been used in cucumber or melon-beds, and mixed well with the loam in the compost-yard. The pear is, generally, a hardy tree, much more so than the apple, and will prosper in soils where apples will not live. Pears require a soil much stronger and deeper than any other of our cultivated fruit-trees.

Apples.—In preparing borders for apples, if the soil be tolerably good, and the sub-soil perfectly dry, little else is required, but if the soil be not naturally good, it must be improved by removing the bad, and substituting better mould. In soils extremely sandy, gravelly, or clayey, apple-trees will thrive but little, and in wet ones, they soon canker and die. One-third or one-fourth of virgin loam of middling texture, with a small addition of very rotten dung, will improve soils of a very bad nature sufficiently for the production of good apple-trees.

Cherry.—The cherry delights in a dry, light, and rather sandy soil, but not gravelly, in which latter soil it soon perishes. Any good garden-soil is fit for the cherry, and if the soil be not of itself good, it may be rendered sufficiently so by the addition of one-third or one-fourth of fresh light loam, such as has been already recommended for the apples. Some sorts, as the May-duke, will thrive in any ordinary garden-soil, and on almost any aspect with equal success.

Plums.—Plums are found to flourish best in a soil neither too light nor yet too heavy and wet; in either extreme they seldom do well. Borders for plums, if not naturally good, may be rendered so by making the bottom perfectly dry, by draining, and making the borders to consist of one half light fresh loam, and one half garden-mould, vegetable mould, and road-scrapings mixed together, and prepared some time before using. In soils not congenial to them, they are apt to gum and canker, in which case they should be cut down and the mould entirely cleared away from their roots, and the fresh compost, already recommended, given them.

CHAP. V.

ON THE PROPER ARRANGEMENT AND ASPECTS FOR FRUIT-TREES UPON WALLS, AND THE DISTANCE AT WHICH THEY SHOULD BE PLANTED.

In gardens where forcing-houses occupy the principal or south aspect, it is seldom that much room is left for a great variety of the sorts of finer fruits, unless the garden be extensive enough, and so arranged, by the disposal of the walls, to have more than one principal wall having a south aspect. In such cases, where there is a proper proportion of walls of all aspects, we would recommend dividing each into as many divisions as it is wished to have sorts of fruits cultivated, arranging the divisions in proportion to the quantity of each sort of fruit and aspect. An arrangement of this sort we consider of more importance than appears in general to have been attached to it. The principal reasons, in support of such arrangement is, the facility with which borders may be prepared for different species of fruits; thus, fifty or a hundred yards of border for the more delicate trees, such as peaches, nectarines, &c., may be prepared entirely for them, whereas, if they be promiscuously planted among the other trees, the preparation of the border could not be so well accomplished. The advantage of protecting them occasionally, of watering, &c. will be great, independently of the effect which it will produce when the trees are established, and each occupies its respective share of the wall, thereby giving a regularity and order to the whole. The merits of the sorts can be better ascertained by comparison, when growing contiguously, than if grown at a distance from each other.

A south or principal aspect should be occupied with vines, figs, peaches, nectarines, the finer sorts of pears, and a few cherries, plums, and apricots. The vines and figs must occupy such a portion of the wall, according to the circumstances of the situation, such as the probability of their ripening, &c.; and the portion appropriated to figs must be regulated by the taste of the proprietor. Unless in very favorable situations, and where the proprietor esteems the fruit of the fig, the smallest proportion of the wall should be occupied by them. Or the vines may be planted at convenient distances, and trained to the top of the wall with a naked stem, and then trained horizontally along under the coping. In this way they will not occupy much space, nor interfere, at least for some years, with the other trees. If trained in this manner, they may be planted at thirty or forty feet apart; but if planted to fill up a regular space of wall, which for many reasons is to be preferred, they may be planted at the distance of four to six feet apart, according to the height of the wall. For high walls, and weak growing vines, they may be planted at three feet apart; but for strong growing sorts, and walls of less than the ordinary height, they must be planted at a greater distance from each other. The largest proportion should be planted with peaches and nectarines, at a distance of from twelve to fifteen feet apart, that is, the trees which are intended to remain permanently, and between them should be planted *riders* of the same sorts of fruits, in order the sooner to fill the wall. This is to be understood for walls of more than ten feet in height; but for walls of a less height, it is not worth while, as gooseberries, currants, or raspberries, will answer better, and produce fruit sooner; but, as the permanent trees, which should always be dwarfs, fill up, the riders or other substitutes should be cut away by degrees, to make room for them. The next division should consist of the finer sorts of pears, which should be planted dwarfs, and at from twenty-four to thirty feet apart, according to the mode of training intended to be adopted, whether fan-formed or horizontally; the latter mode requires the greater distance, but the former being the most natural, and unquestionably the most elegant, is now generally adopted; between them may be planted riders of cherries, plums, or peaches and nectarines. As the finer sorts of pears attain a considerable size and age, even under the best management, before they produce fruit, a considerable advantage will be gained by planting such trees as will fruit soon, and be in their turn cut out as the pears advance. The next division will be the choicest sorts of apples, and they should be planted at from eighteen to twenty feet apart, and the intermediate spaces also filled up with such trees as will produce fruit soonest, and be also cut out as the apples advance. Apricots should occupy a smaller proportion, as they will, in good situations, arrive at great maturity, having either an eastern or western aspect. One or two trees will, in a good situation, be sufficient for a south wall, and those merely to come in a few days sooner than those on the other aspects. Plums and cherries should also, in favorable situations, occupy only a small proportion of south wall, as they will do equally well on other aspects; a tree or two of each may be planted for the same purpose as the apricot, or they may be introduced in the spaces between the other permanent trees, to be cut out as will be found necessary. The Morella cherry is much improved by being planted on a south aspect; one of them may be planted, and also a May-duke, as the latter, being an early fruit, will be a great acquisition to the dessert before the other fruits ripen.

Eastern aspects are considered by some as next in importance to the south, whilst others give the preference to the west. If both be equally sheltered, the preference, if any, should be given to the east, as enjoying the rays of heat sooner in the day; but if not partially shaded, so as to allow the frost to be gradually removed in the spring months, before the rays of the sun strike upon the trees, the preference should then be given to the west. The sudden transition of heat darting on the trees by the morning sun, after the cold frosts of the preceding night, is the cause of so many failures of our earlier fruits in this uncertain climate. As both aspects are so nearly alike, they may be considered under the same head.

The arrangements advised for the south aspect, as to forming the border into divisions for each species of fruit intended to be planted, should also be attended to in this instance. The proportions, however, must be different. Vines should be planted only in very favorable situations on eastern or western aspects; but, provided that they have been accommodated with room on the south, it may be better not to plant any. Figs will thrive on either of these aspects under favorable circumstances; however, if they have been planted on a south wall, only a few trees of them need be planted on any other, and that merely for prolonging their season.

Peaches, nectarines, and apricots, should occupy a considerable portion on both, as by a judicious arrangement of sorts their season will be considerably lengthened. Both early and late sorts should be planted on each; if the latter sorts should in some seasons not sufficiently ripen, the loss will be trifling, as the advantage of them in October, in propitious seasons, will amply compensate for the loss of a crop in less favorable ones. Care however must be taken not to plant many late sorts on eastern or western aspects, particularly in cold situations, for if the wood should not ripen, the trees would be materially injured. But with a little precaution in covering them, in wet and backward autumns, with temporary frames and lights, they will be found, in most seasons, to ripen both wood and fruit.

The secondary sorts of fine pears and apples, as well as many of the finest, will ripen well on these aspects, and they should occupy the largest proportion of wall, that is, bearing the same proportion as peaches and nectarines on the south.

Cherries and plums should here occupy a space, particularly the finest plums, and both will come in intermediately between those of the south aspect and those on standards.

A northern aspect is the least favorable for most fruits requiring the aid of walls to bring them to perfection; however, for many sorts of cherries, plums, and some pears, it is admirably suited, as well as for late crops of currants, gooseberries, and raspberries, to be protected by nets; the two former lasting till destroyed by the frost, and the raspberries as long as the nature of their fruit will admit of. Morella cherries can, by being protected by nets, be preserved on a north wall till the end of November in favorable seasons, and, with the addition of red and white currants, will be extremely useful, both for culinary purposes and the dessert, when all other small fruits are out of season. Upon a northern wall, the largest portion should be planted with cherries, particularly Morellas, and all vacant spaces should be filled with red and white currants, if a separate wall cannot be allotted for the latter by themselves, which they amply deserve.

Many sorts of plums ripen well upon northern walls, particularly in the southern counties, as well as some valuable pears, and many apples. The same arrangement should be attended to in keeping each species by themselves.

In regard to the distance that wall trees should be planted, many circumstances are to be considered, such as the height of the walls, the kind of tree, and mode of training intended to be adopted. For walls, twelve feet high (the medium height) the late W. Nicol recommended for apples, eighteen or twenty feet; apricots, twenty or twenty-four; cherries, twelve or fifteen; figs, fifteen or eighteen; pears, twenty-four or thirty; peaches and nectarines, twelve or fifteen; and plums, eighteen or twenty. For walls not exceeding five or six feet in height, he recommends for apples, thirty feet; cherries, thirty or thirty-five; plums, twenty or twenty-four; and pears, thirty or thirty-five.

Abercrombie, upon the same subject remarks, that upon walls of the above-mentioned heights, vines should be planted at from ten to fifteen feet apart; peaches and nectarines from fifteen to twenty; figs, eighteen to twenty (or more, as the bearing branches are not to be shortened); apricots, fifteen feet for the early sorts, and eighteen to twenty-four for the latter, and freely growing kinds; cherries, from fifteen to twenty; pears, from twenty to twenty-four; apples, on dwarf stocks, fifteen feet, and if on free stocks, thirty feet; plums, fifteen to thirty-five; mulberries, fifteen to twenty. Upon walls, he adds, of only nine feet in height, the distance from each tree should be increased to one-fourth; and upon those only six feet high, the distance should be increased one-half.

The above arrangement of the wall-fruit-trees refers to walls that are not *hot walls;* upon such, the arrangement may be somewhat different, and upon them many fruits may with propriety be planted, that would not succeed in ordinary situations, upon solid walls, that is, walls not heated by artificial means. The general prejudice against hot walls is, we hope, now likely to be exploded, for if they be heated by hot water, as already noticed, they will give a temperature more equable, the want of which has hitherto been their greatest defect, one part of the wall being over-heated, while another was scarcely heated at all. In gardens, where the principal walls, having a southern aspect, may be covered with glass, peaches and other of the finer fruits may be successfully cultivated upon eastern and western aspects, having the walls hollow and heated by hot water, both sides of the wall deriving an equal degree of heat, and that from the same consumption of fuel.

In situations where, from unfavorable circumstances, the trees may be expected to be short-lived, they should be planted much nearer to each other; as, in some situations, the trees would be worn out before they could be brought to cover so great a space as has been allotted to them in the foregoing remarks.

MONTHLY OPERATIONS

OF THE

FRUIT GARDEN.

JANUARY.

PRUNING FRUIT-TREES.

The art of pruning chiefly consists in being acquainted with the nature of bearing in the different sorts of trees, and in forming an early judgment of their habits and manner of producing their shoots and branches, as well as other circumstances, for which some rules may be given; but there are particular instances, of which it is impossible to decide but on the spot, and which depend chiefly on practice and observation. No rules can be laid down that are equally applicable to all trees or all situations. The objects of pruning are various, such as promoting growth and bulk; the renewal of decayed plants and trees; modifying the form; enlarging the fruit; promoting the formation of fruit-buds; lessening the bulk of the trees; adjusting the branches to the roots; and the removal or cure of diseases, &c.

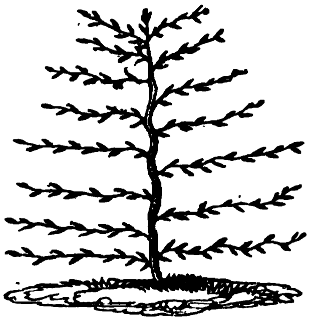
PRUNING STANDARD FRUIT-TREES.

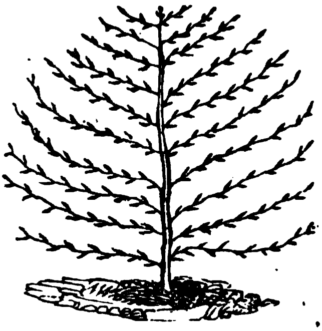
Standard fruit-trees are seldom much pruned after they have attained a bearing state, except to regulate any irregularity in their branches, although no doubt can exist, that they would, in most cases, be much benefited by a more regular use of the knife. Upon this subject, Knight justly recommends, that the points of the extreme branches should be every where kept thin and pervious to the light, so that the internal parts of the tree may not be entirely shaded by the external. The light should penetrate freely into every part of the tree, and if this be judiciously attended to, every part of it will be equally productive of fruit, and the trees thus treated will not only produce a greater quantity of fruit, but the fruit itself will be much better in quality, having the full benefit of the sun, which in crowded trees is not the case. The trees will also be able to bear a greater load, without running the risk of breaking down.

Thinning the branches of old trees, and keeping them supplied with fruitful wood, encouraging young shoots to take the place of those that are getting into decay, and keeping them moderately thin, are points which ought to be strictly attended to. All formality, however, in their heads should be disregarded, as being both injurious and incongruous. No tree looks so well as one which spreads out its branches as nature directs; and all look ill which are clipped and shorn into conical shapes, such as balloons, cones, pyramids, &c. It is long since that these fantastical forms have been justly expelled from our ornamental trees, and it is with regret that we hear them recommended for our fruit-trees. The nearer our modes of training approach to nature, the more likely are we to have healthy and fruitful trees.

PRUNING AND TRAINING APPLES AND PEARS ON WALLS AND ESPALIERS.

These two trees being similar in their manner of bearing, that is, that both of them produce their fruit on spurs, which issue chiefly from the sides, though sometimes, from the ends of their branches, one mode of training and pruning will answer for both. When the espalier or wall on which they are planted is not more than six feet in height, then horizontal training is best; but when the walls are of greater height, then the fan method is preferable, and is the only mode of training pointed out to us by nature. Indeed, these two methods of training all fruit-trees, excepting the vine, (and that also, in some cases, may be very properly trained in the same manner,) seems from experience to convince us of the inutility of any other mode. The different modes of training recommended of late years produce extremely unhandsome trees, and we have not been able to discover any great advantage gained, either in the quantity or quality of the fruit, nor in the health of the trees. For low walls we give the preference to the first of these methods, and always for espaliers; and on a



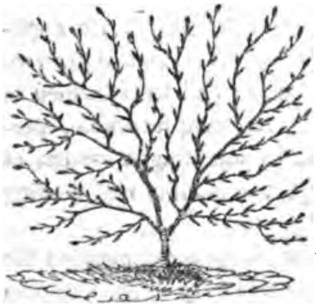


high wall, no mode, we think, looks so elegant as that of a tree fan-trained. Apples and pears may be either trained fan-like, or horizontally, according to circumstances and taste. By training in the fan-manner a branch may, at any time, be supplied more readily than in the other, for which reason, it is preferable for Morella cherries, peaches, nectarines, plums, and apricots. The distance at which the principal branches should be laid in, is from nine to twelve inches, according to the nature and strength of the tree; some sorts growing more grossly than others, both in wood and leaves. Trees that have arrived at a full bearing state, and have filled the spaces allotted to them, require nothing else, in respect to pruning, than to regulate their spurs, if much clustered, and to prune away the superfluous breast-wood made in summer. The usual practice, however, till of late years, has been to leave these spurs standing out from the walls for a great distance, and so thick that the tree in the end becomes like a hedge more than a cultivated fruit-tree. The spurs thus standing out so far from the wall, benefit very little from the rays of heat reflected from the wall, and are as much exposed to the effect of frosts, and cutting winds, as if they were actually growing on standards, independently of which, the fruit produced is of a very inferior quality. At this season, examine all the apple and pear-trees, both on espaliers and walls, and thin out and regulate all their spurs. Wherever large rugged projecting spurs occur, cut them clean out, close into the branch; and at the same time, be careful to preserve a sufficient number of the healthy fruit-spurs emitted from the branches. Cut out all decaying, cankery, and dead wood, or barren stumps, which will not only give the trees a neater appearance, but will also much improve their health, by allowing a free circulation of air and sunshine to every part of the tree, and by displacing all useless ill-placed spurs, disencumber the tree of a great load of entirely useless leaves and small spray, which it would otherwise have to support, and which, to a serious degree, would rob the fruit of a great share of its nourishment. Apples often show fruit-buds at the bottom of the breast-shoots shortened in summer, in which case, if the tree be thin of fruit-spurs, they are to be retained, the better to ensure a crop. Some sorts of pears show buds of this description, particularly in good seasons; under similar circumstances, they ought to be allowed to remain; but if there be plenty of fruit-spurs without them, they should be cut out, to prevent an unnecessary quantity of useless breast-wood being produced the ensuing summer. Trees that have not filled their respective places, and are consequently under a mode of training for forming their several ramifications, must, where the wall requires to be covered, have their nearest or last-formed branches shortened, in order to cause them to push out others to fill the wall. This shortening must be in proportion to the strength of the shoots; strong ones may be shortened one-third of their length, weak ones one-half, or two-thirds, and very weak ones may be shortened into two or three buds. This will cause them to break strongly, and to produce proper shoots with which to form the tree.

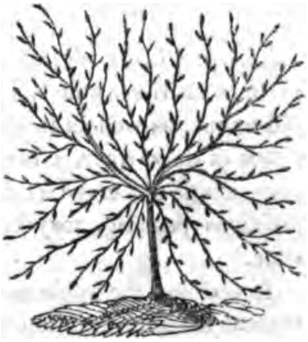
In training horizontally, the side branches, unless in cases of accident arising from bruises or other causes, should never be shortened until the tree has filled the space allotted to it. The upright, or leading shoot which forms the trunk, or main stem of the tree, should at this time, or in March, be shortened, in order to cause it to push out lateral branches. This shoot must be shortened also, according to its strength; if it be weak, it will only be able to push out two lateral branches, consequently it should be shortened to about nine or ten inches; if it be, however, strong, it will in all probability push out four laterals, two on each side; in that case, cut it to double the length of the last. This mode of training is consequently longer in filling the wall than that of the fan-manner. In cases, where the soil is very good, and the trees in a very vigorous habit, they will probably, in some cases, push more than four lateral shoots in one year; if this be apprehended from their appearance, lay the leader in at a greater length, and allow a greater number of laterals to be laid in on each side.

It appears to have been the object of cultivators, in devising a number of forms of training, to attain some degree of control over the circulation of the sap, for the purpose of inducing a greater degree of productiveness; but how far they have attained the end in view, does not clearly appear; it is, nevertheless, evident, that in proportion as they have diverged from the above forms, they have produced deformed and ugly trees. To train fruit-bearing trees, the principal use of which is the production of fine fruit, into unnatural and uncouth forms, merely for fancy's sake, appears as preposterous as it is useless.

To enter into a detail of all the forms recommended would be useless, and far exceed our limits. We give the following, as specimens of the sub-varieties of the two leading modes, which may be considered the fan and the horizontal. No. 1, the irregular fan; No. 2, the stellate fan;

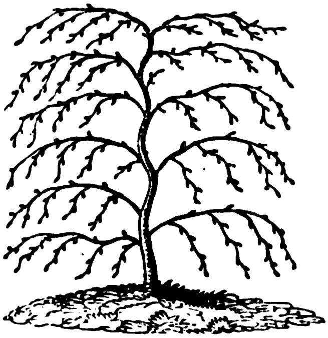


No. 1.



No. 2.

No. 3, the drooping fan; No. 4, the wavy fan; No. 5, the horizontal, with screw stem; No. 6, the horizontal, with double stem.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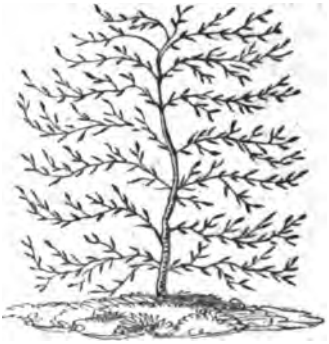
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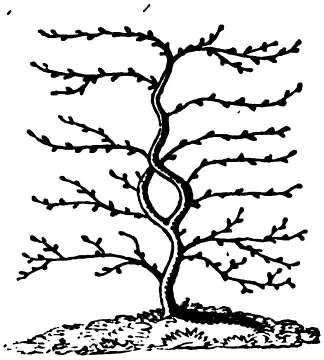
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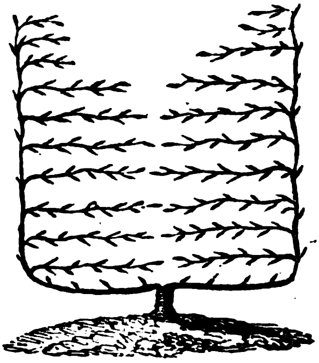
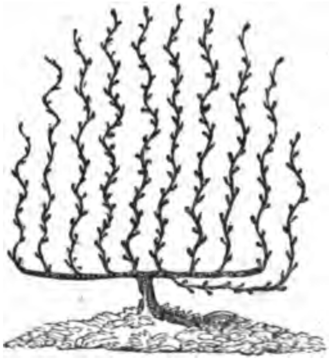
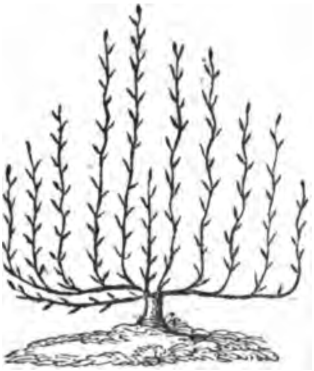

No. 6.

The first five modes of training here represented, are applicable to cherries, plums, and some other fruits, with slight modifications, as well as to apples and pears; and trees trained in either of these ways, other circumstances being favorable, produce abundant crops of fruit, and, by adopting a system of judicious pruning, may be long kept in a healthy and bearing state.

In training the apple and pear, some have recommended the vertical mode of training, and this method very often occurs in the gardens of Scotland. Of this method there are two varieties, the vertical, with screw or wavy shoots, No. 1; and the vertical, with double stem, or upright shoots, No. 2.



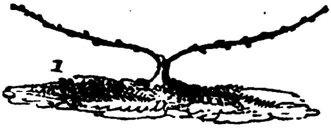
No. 1.



No. 2.

These two last modes of training are sometimes adopted with pears and apples, and commences the same season that the trees are planted, by leading one shoot horizontally from each side of the stem, within a foot or fifteen inches of the ground-surface, and the shoots which proceed from them are trained upright till they reach the top of the wall, and are sometimes trained straight, as in No. 2, and often in a serpentine form, as in No. 1. These are favorite forms of training with Dutch and Flemish gardeners, and appear to have been long practised by them. They are, with us, for the most part applied to the training of currants upon walls, and not unfrequently to vines grown in the open air. Whatever merits they may be supposed to have, in regard to producing fruitfulness in the trees, we confess that they, together with No. 6, appear to be less elegant, as they are the farthest removed from the natural habit of the trees.

Mr. Knight, amongst others, has recommended, with all that zeal and ability for which that horticulturist is so eminently distinguished, a mode of training, which he denominates the open fan form, and which he proposes should commence while the trees are in the nursery, and he considers its application as referring to almost all fruit-trees. This open fan mode of the President's does not materially differ from that described by that eminent French horticulturist, the late Professor Thouin. During the first and second years of training, it differs little from many other modes which have been long in practice, *Figs.* 1 and 2; but the third year it becomes characteristic, by reversing the lateral shoots, *Fig.* 3.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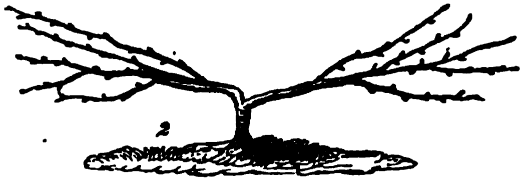
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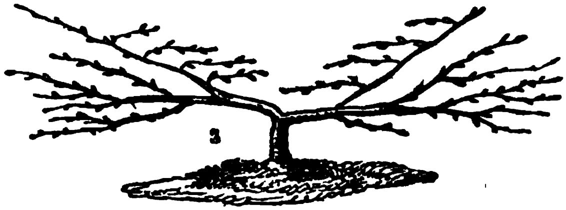
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In pruning at this season, as well as at all others, it is of importance to keep a strict eye on the lower parts of the trees, whether they be young trees training, or old and fully established ones, in order to see if there be any existing vacancy, or any probability of such soon happening. In which cases, if any good shoot be situated contiguously, it should be trained in either at full length, or shortened to a few eyes to force out as many shoots as may seem necessary; for due precaution should ever be observed in taking care to have a sufficient stock of young wood coming forward to fill up any vacancy that may occur, and for substituting a new set of branches for such as are either decayed or stand in need of retrenchment. As the operation of pruning goes on, it is necessary to have the branches again, as soon as possible, re-nailed or tied to the wall or espalier, taking particular care to train them in with great regularity. If horizontally, lay them in parallel to each other, at equal distances throughout; and if fan-trained, lay them in straight, allowing them greater space as they extend to the extremity of the trees, laying in the principal branches first, and the smaller ones regularly between them, avoiding crossing any of them, and observing to make the opposite branches on each side range equally in the same manner and position.

PRUNING PEACHES AND NECTARINES.

If the weather be mild, and the wood of these trees has been well ripened during the previous autumn, they may now be pruned; but in most cases, we would recommend February and early in March, when all danger of frost is past. This is of the greatest consequence in cold wet soils, and consequently in late situations. At all events, whether the pruning be now carried into effect at this time, or not, if the trees have not been disengaged from the walls in December, they should now be done, that is, by unnailing them, and securing the larger branches only to the wall, to prevent accidents from snow or strong winds; or a few stout poles may be placed between the trees and the walls, to which some laths or cords may be attached, for the purpose of having some of the leading shoots of the trees affixed to them. This will prevent their being broken by accidents, and admit of more readily getting at the branches, when the pruning goes on; besides, if kept in this position till the end of February, or later, it will greatly retard the buds from swelling, and consequently give them a chance of escaping the severe frosts in spring during the time they are in blossom.

As to the mode of training, we perfectly agree with Nicol, that they should be trained in the fan manner, and no other. It is not practicable to train them to any considerable extent horizontally, as they produce their fruit on the wood of last year; and because these often require to be shortened, and the older branches cut entirely away, in order to obtain a supply of young bearing wood. These trees may be said to be always in training, as there must be a constant cutting out of the old and encouraging of the young wood in every part of the tree, even after it has filled the full place allotted to it. The distance that the old or leading branches may be placed from each other is not important; they may be sometimes pretty close and at others more distant, but this must be regulated by the quantity and position of the young wood that may be upon them. These, in healthy and well-regulated trees, should be laid in at the distance of from six to nine inches apart from each other. It is the regular management of the young shoots, more than of the old ones, that produce health and beauty in a peach or nectarine-tree, and by having a regular supply of young wood in all parts of the tree, a regular crop of fruit will follow. To produce this regular supply of young wood, it is necessary to have recourse to shortening the branches of the preceding year, more or less, according to their size, the state of the tree, and other circumstances. All those which are hurt by frost, and not sufficiently ripened to their extremities, or bruised by accident, cankered or mildewed, should be shortened; and also all those from which it is wished to procure a supply of other shoots, either to fill a vacancy, or for the extension of the tree. The lengths to which they should be shortened, depend also on a variety of circumstances, such as their strength or debility; the more strong and luxuriant may be shortened to one-third of their length, and sometimes, when very strong, and the border in good state, to be shortened only a little. In all cases, where shortening is necessary, care must be taken to cut them at a wood-bud, and not at a flower-bud, which may be distinguished in late pruning more readily than in early or autumn pruning, by the flower-buds being always bold, round, short, and turgid, while the others are rather long and flattish, and generally terminating in a sharp point. It very frequently happens that a wood-bud is placed between two flower-buds, particularly on strong growing healthy trees; and where this is the case, shortening may be safely performed at such buds, observing to cut at a little distance above them, for fear of injuring either of the buds, but particularly the wood-bud.

The principle of shortening these trees is to keep a supply of such shoots as are to produce future crops, and fill the space allotted to each tree. While trees are young, this shortening of their extreme shoots is of the utmost consequence, particularly towards the bottom and middle of the tree; for if they were laid in at full length, the bottom and heart of the tree would thereby become thin, and indeed naked of such shoots; and the nature of most stone-fruits is such, that amputations of large branches are dangerous, producing gum, canker, and finally death. But this is more particularly the case with peaches and nectarines; therefore a supply of young wood should be encouraged, and is easily obtained at the bottom and in the middle of the trees, by attending to shorten the greater part of the shoots, and retaining the young ones thus produced, in such proportion as may be deemed necessary for keeping up the supply. At the more extreme parts of the trees, this shortening is less important, particularly in old trees, or such as have filled their allotted space of the wall; but where such have been injured by frost, mildew, or other accidents, they should be always cut back, until the wood appears quite sound and perfect. Where this is not the case, it will be readily seen by the color of the wood, which will appear brown, or cankered to the pith. Sometimes this appearance will run back to where the branch issues from the leader; in such case, remove it entirely, as there is little chance of a healthy supply of shoots being produced from such a diseased branch; but in cases where the entire removal of such a branch will deform the tree, and no branch can be brought in to succeed, without crossing some of the larger branches, then, one or two wood-buds may be left at the base of the shoot; if they break strong, and the tree be otherwise in good health, there will be a chance of providing a shoot or two, that, with proper care, may fill up the space required. In trees of gross habits, that is, such as are growing too luxuriantly, the knife should be used with care, as the more they are cut, the more will they be encouraged to grow. In such cases, shorten only the tips of the branches, and lay in as much wood as can conveniently be done; this will soon correct the gross habit of growth, and throw them into a fruit-bearing state.

All trees naturally grow strongest at their extremities, whether they be young or old; it therefore follows, that we should exercise the knife less freely there, and more freely in the lower and middle parts, in order to counteract this propensity, and to obtain a regular supply of bearing wood. Where a tree abounds with middling-sized well-ripened shoots, having a bold wood-bud at their point, as it often happens on such, that there will be a wood-bud at the point, and only one or two at the base of the shoot, the intermediate ones being all flower-buds, then, in this case, they should be laid in at full length. To cut in the middle of such shoots would be useless, as no bud would push, except that at the bottom; and although the fruit-buds might blossom, and even set their fruit, they will ultimately all fall off for want of a leading shoot to draw nourishment for their support. In this pruning, clear the tree of all redundant, irregular, and improper shoots, remove or reduce some part of the former bearers of the preceding years, cutting the most naked quite away, and others down to the most eligible younger branch, or well-placed shoot; but this should be done carefully, not to cut too much out at once, but to cut a portion annually. Also all dead or diseased shoots should be cleared away. Peaches will sometimes produce fruit upon spurs; and in cold late situations, Mr. Knight has recommended the adoption of them to a certain latitude. "Instead," he says, "of taking off so large a portion of young shoots, and training in a few only to a considerable length, as is usually done, and as I should myself do, to a great extent, in the vicinity of London, and in every favorable situation, I preserve a large number of the young shoots, which are emitted in a proper direction in early spring by the yearling wood, shortening each, where necessary, by pinching off the minute succulent points, generally to the length of one or two inches. Spurs, which lie close to the wall, are thus made, upon which numerous blossom-buds form very early in the ensuing summer, and upon which, after the last most unfavorable season, and in a situation so high and cold that the peach-trees, in the most favorable seasons, had usually produced only a few feeble blossoms, I observed as strong and vigorous blossoms in the present spring, as I have usually seen in the best seasons and situations; and I am quite confident, that if the peach-trees in the gardens round the metropolis, had been pruned in the manner above described in the last season, an abundant and vigorous blossom would have appeared in the present spring. I do not, however, mean to recommend to the gardener to trust wholly, in any situation, for his crop of fruit to the spurs produced by the above mode of pruning and training the peach-tree. In every warm and favorable situation, I would advise him to train the larger part of his young wood according to the ordinary method: and in cold and late situations only, to adopt, to a great extent, the mode of management above suggested. A mixture of both modes, in every situation, will be generally found to multiply the chances of success, and therefore neither ought to be exclusively adopted or wholly rejected in any situation. The spurs must not be shortened in winter or spring, till it can be ascertained what parts of them are provided with leaf-buds."

In situations where the earliest sorts of peaches and nectarines will not ripen, without adopting this or any other method of pruning to produce spurs, we would recommend only a small portion of wall to be taken up with them, as the finer sorts of pears and other fruits that will ripen, will repay the owner much better than striving to produce fruits in a situation decidedly unfavorable to them. However, we can see no great impropriety in adopting the mixt method here recommended by this intelligent horticulturist to a certain extent in cold situations, but we think it entirely useless in the neighbourhood of London, or other equally favorable situations, and we are convinced that the fruit produced by such a mode of pruning will be much inferior to that which is produced on the young wood entirely.

Where peach or nectarine-trees have by bad management, or other causes, become naked at the bottom of the wall, or the middle of the tree, and are otherwise in a decaying state, they may be headed down, and the soil renewed; but if in a very bad state, we would recommend the renewal of the borders, and the planting of young trees, as the most certain mode of procuring both fine fruit and healthy trees.

NAILING AND ANOINTING THE BRANCHES OF PEACH-TREES.

At whatever season the operation of pruning is performed, whether in autumn, mid-winter, or spring, as soon as the trees are pruned, they should be carefully replaced on the wall, if it be not intended to retard the buds, by keeping them detached as long as is deemed necessary from the wall. In nailing them, observe to leave sufficient room in the shreds; it is a good rule to go by, to allow as much room as would admit another shoot of equal size along with that laid in, to allow plenty of room for the swelling of the shoots. In young luxuriant trees, this is of the utmost importance, for when this precaution is not attended to, the shoot swells so fast, and not having sufficient room in the shred, is compressed on all sides, and often almost cut through. This produces a wound, which, in most cases, ends in the death of the shoot. In driving the nails, care also should be taken to lay their heads in a position sloping from the shoot, or branch, in order that they may not grow over them, and nails with the smallest heads should always be used, and no more used than are absolutely necessary to keep each branch in its proper place. Old nails should never be used until they have been re-pointed; and if there be any apprehension of insects being either on the trees or in the wall, the nails should be cleaned before using, which may be readily done by boiling them in water alone, or in a mixture of soap, sulphur, and tobacco. The shreds once used should never be used again, as they are apt to contain the insects, or their eggs; and as the expense is trifling, it is better to guard against such enemies, than to combat them in any other way. In making the shreds, they should not be any broader nor longer than is necessary for the sort of tree intended to be nailed, and each size kept separate in the making, which will be found more convenient when they are to be used. Strong shoots of trees may be securely fastened to the wall with small pieces of tarred cord, instead of shreds, it is more strong and durable, and is not liable to harbour insects, the portion of tar upon it keeping them off.

The trees should, previously to nailing, be washed or anointed, both for the destruction and prevention of insects. This is an important business and should not be neglected, and as no time in the year is so well calculated for the operation as winter, when the leaves are off, and the trees disengaged from the wall for the convenience of pruning, this operation can also be more conveniently and effectually executed. Many preparations and compositions have been recommended for this purpose. Independently of every gardener having his own approved wash or preparation, which he finds, from experience, answers his several purposes, either for the removal or prevention of his insect enemies, many quack recipes have been imposed on the public, and, we need not say, without exhibiting one of the many excellent virtues which they are pretended to possess. Sulphur and tobacco seem to be the two substances that the majority of gardeners use and recommend, with the addition of soap, probably more for its adhesive property, in making the others remain longer on the trees than they otherwise would; it is also of use as a cleanser and softener of the wood.

PRUNING APRICOTS.

Apricots bear their fruit both on the young shoots of last year, and also on spurs arising on the two or three year old branches. The Moor Park apricot bears chiefly on the last year's shoots, and on close spurs formed on the two-year old wood. In pruning, therefore, attention must be paid to provide as much of such wood or spurs as is necessary. The operation may be performed from the fall of the leaf till the beginning of March, in mild weather. When it is deferred till the buds begin to swell, the blossom-buds can be better distinguished, as has been observed for peaches and nectarines. In performing the operation of pruning, cut out some of the most naked parts of the two last years' bearers, and all naked old branches, not furnished with a supply of young wood, or promising healthy spurs, either to their origin or to some well-directed lateral, as most expedient, to make room for training in a supply of young and fruitful wood. Cut clear away all dead, or decaying old wood, or spurs, and observe to leave a leading shoot at the end of each branch, either a naturally placed terminal or one formed by cutting. Where a vacuity is to be furnished into a proper leader, let the shoots retained for bearers be moderately shortened. Reduce strong shoots in the least proportion, cutting off one-fourth or less of their length; shorten the weak shoots by taking away one-third, and sometimes one-half, and cut such as are very weak to one or two buds. This shortening will conduce to the production of a supply of lateral shoots the ensuing summer, from the lower and middle placed eyes, whereas, without it, the new shoots would proceed mostly from the top, and leave the under part of the wall and middle of the tree naked. Never prune below all the blossom-buds, except to produce wood, in which case, cut nearer to the origin of the branch, as noticed above. As on these trees small fruit-spurs, an inch or two long, often appear on the two and three-year old wood, these spurs should generally be retained for bearing; but when any of them project foreright too far from the wall, cut them clear off; for spurs projecting above two or three inches from the wall, although they may blossom, and even set their fruit, they seldom ripen them, and when they do, the fruit is never good in quality, unless the situation and season be both very favorable. The thick clusters of spurs, which form on old trees, ought also to be either thinned, or if not particularly wanted, cut entirely away. As each tree is pruned, wash them, as directed for peaches and nectarines, and let them be immediately nailed in closely and regularly to the wall, observing the same caution, as to driving the nails in a sloping direction, and having the shreds of a proper size, according to the size of the branches. Apricots are generally and very justly trained in the fan manner.

PRUNING AND TRAINING CHERRIES AND PLUMS.

Both cherries and plums produce their fruit on spurs, and on the young wood of the preceding year, and therefore, to prevent repetition, may be considered under the same head. Fan-training is also to be preferred to any other, for reasons already given; the horizontal mode, however, may be with more propriety adopted with cherries and plums, than with either peaches, nectarines, or apricots. Morella cherries we should always prefer fan-trained to any other method, as they produce their fruit chiefly upon young shoots of the last year, or on close spurs formed on the two-year old wood, and should be trained much in the manner of peaches. Considering, therefore, that they are to be trained in this method, let the branches be arranged at the distance of eight or nine inches apart, according to their strength and size of the foliage. Old trees are apt to form their spurs into clusters, which ought to be neatly thinned out, chiefly cutting away the parts farthest from the wall, and retaining those placed nearest to it, that the fruit produced upon them may be benefited by its influence. If the trees be in a healthy state, and if there be an appearance of plenty of fruit-buds on the young wood, that is, the shoots and branches of the preceding year, the largest of the spurs may be cleared away, or very much thinned, as the fruit produced from such young shoots as can be laid in close to the wall, will be much superior to that produced on spurs, both in size and flavor.

Clear the trees of all sickly, diseased or dead shoots, dead spurs, or any lateral spray that may have grown since the summer pruning, observing to cut clean into the old wood with a sharp instrument, and not to leave a ragged wound, which would admit moisture, and soon produce decay, as well as gum and canker, to which all stone-fruits are liable, from wounds arising from bruises or careless pruning. If it be necessary to use the saw in removing large branches, smooth the surface of the cut with a sharp knife, and paint over the wound with any sort of paint most convenient, in order to exclude the air and wet until the young bark heals over it. In established trees of these sorts, no shortening should ever be done, unless in such cases, where a vacancy has arisen in the tree from the loss of a branch by accident, or otherwise; in such case, shorten either the next, or the two next, in order to produce shoots to fill the vacant space. The leading shoots of such trees as have not yet filled their respective places on the wall, should be shortened, and treated nearly in the same manner as has been directed for apples and pears. Small shoots that abound with fruit-spurs, and are perfectly ripened to their extremities, may be laid in, if wanted as temporary shoots, that is, until they have ripened off their fruit, and then cut out altogether; but if wanted to fill up a vacant space, shorten them into a good wood-bud, or lay them in at full length.

PLANTING AND PRUNING RASPBERRIES.

Where fresh plantations of raspberries are intended to be made, this is now a proper season for that purpose. The ground should be either deeply dug or trenched, and if not in good condition, should be moderately enriched by the addition of manure. The pruning of these plants may now also be proceeded with, removing all old wood, and all the branches of the last season's growth which are weak or not well formed, as well as all good wood which is superfluous, leaving only from three to five of the strongest and best shoots, which will be sufficient for producing the ensuing crop.

PLANTING AND PRUNING GOOSEBERRIES AND CURRANTS.

New plantations of these fruits may now be made, and the operation of pruning them expedited, as they are sufficiently hardy not to be injured by the severest frosts. All worn out or decaying branches should be removed, as well as all the young spray of the preceding year's growth, unless in those cases, where a branch or two may be wanted to supply the place of those decayed or worn out. Choose some of the best formed shoots for this purpose, and such as are most contiguous to the space intended to be filled. The last young shoot, at the point of each leading shoot, should be retained and left unshortened, to act as a conductor of the sap to the extremities of the plant. The bushes should be kept reasonably thin of wood, particularly towards the middle, to admit of a free circulation of both sun and air to the fruit.

FEBRUARY.

PLANTING FRUIT-TREES.

Fruit-trees of all sorts may be planted any time this month when the weather is open. Let every sort be planted at a proper distance, that the trees may have, for some years, plenty of room to grow, without interfering with each other. For the respective distances, see the *Introduction to the Fruit-Garden.*

The distances at which they should be planted may, at the first sight, appear considerable, but under favorable circumstances, they will soon fill the spaces allotted to them. Trees planted on low walls require to be planted at a greater distance than on higher ones, in order that they may have greater scope to be trained horizontally, where they cannot be trained in the fan manner.

In planting all kinds of fruit-trees, it is of the greatest consequence to them not to be planted too deep. Open for each tree a circular hole or pit, wide enough to receive the roots when fully spread out, so that none of them will rest upon the sides of the pit. Then prepare the roots by pruning away all injured or broken ones, and shortening the long naked roots, that are not furnished with fibres. The good roots even, if too many, should be thinned out, for as the branches are to undergo a similar operation, by thinning out weak, useless, or decayed shoots, and shortening the strong and luxuriant ones, according to their strength, in order to cause them to push out shoots, where required, for forming the head of the tree; the roots, likewise, should be pruned in proportion to the branches, and the branches in proportion to the roots. In thinning the roots, be careful not to cut away but as few as possible of the smaller ones or fibres, as they are the principal organs which procure and convey nourishment to the trees. This done, spread out the roots and fibres, carefully bedding them in the compost prepared for that purpose, already noticed. If it be considered necessary, from the nature of the soil, to plant entirely in the above compost, let that be done; if the soil be good, use only a little merely to cover the roots, then fill in the common earth, gently pressing it round the roots, first with the hand, and, after a great portion has been put in, afterwards with the foot; but this should be done carefully, so as not to injure the roots by bruising them, nor tearing them from the stem of the tree. While the mould is putting in, gently pull up the tree, and shake it carefully about, if the mould be dry and friable, so that the finer particles may get into the clefts among the roots, leaving no spaces unoccupied with mould about the roots. Before placing the trees in the pits, have, either in a large tub, or by pouring water on the ground and stirring it up to form a thick consistency, a puddle, in which to emerge the roots two or three times, or as often as may be deemed necessary, until a sufficient quantity of the puddle attaches itself to the roots. For the roots of all trees, excepting peaches and nectarines, this puddle may be made with the liquid drainings of the dunghill, diluted with water; or in want of that, add a portion of good dung to the mould, of which it is made. When the trees are planted, let them, if wall trees, be headed down according to whatever mode of training it is intended to adopt, and then neatly nailed to the wall. If standards or dwarfs, prune them accordingly, and let them be staked in a neat and careful manner, to prevent the wind from blowing them about; observing to place a pad of hay, or old mat, between the tree and the stake, where they come in contact, to prevent the bark from being taken off by the friction. When the operation of planting and supporting is completed, give each a gentle watering, according to the state of the mould in which they are planted, letting them be planted rather wet than otherwise, and cover over the surface, as far as the roots may extend, with littery dung or fresh turf, turning the green side undermost; this is to remain until it be entirely rotted, and then may be carefully pointed in, but not so deep as to injure the roots. The intention of this covering is not so much for a manure, as a means of preventing the drought from affecting the roots, and to keep the mould damp round their roots as long as possible, or until they have taken fresh root.

PLANTING ORCHARD-TREES.

If the orchard has been trenched, or prepared as has been already advised under that head, and if the soil be dry, and the weather open; the several fruit-trees may now be planted. Having brought them to the spot, proceed to trim their roots and branches, as directed in the last article, and plant them in the manner there laid down, giving each tree a portion, more or less, according to the soil, or other circumstances, of the prepared compost directed to be prepared for them, and on no account fail to puddle the roots of them well. After planting, let them be properly staked and supported, and the ground mulched or covered round their stems, as above directed. If the orchard be not sufficiently fenced to exclude hares, each tree should be protected from them by being well bushed round with thorns, or otherwise secured. The trees being planted, the ground between them may be put in order, by manuring, if necessary, and digging, to be ready to receive such crops of seeds or roots, as may be deemed most useful to the owner. It is a mistaken notion that ground planted with fruit-trees should be kept entirely for them, at least for the first years of their growth. The operations of hoeing and cultivating it, will much improve the trees in their young state, and the crops obtained by the public fruit-grower will help to pay his rent and the expense of cultivation. In private orchards or fruit-gardens, it will be a useful appendage to the culinary-garden, and by cultivating it, the gardener will be enabled to give rest to a part of his ground, which has been under culinary crops for years. After the fruit-trees are established, it may be sown down in grass, both for neatness and profit. When the trees are once in a bearing state, they will, under favorable circumstances, pay for the ground, and at such a time, cropping underneath them should be abandoned.

DRESSING FRUIT-TREE BORDERS.

Let all the fruit-tree borders be neatly dug over, as soon as the pruning and nailing of the trees are finished, which should now be forwarded with all expedition. In digging fruit-tree borders, care must be taken not to dig too deep, for fear of injuring the roots of the trees; and in doing this, prefer to use a three or four-prong'd fork to turn the ground with instead of a spade. If the borders have been ridged up in autumn, level down the ridges, and dig the whole over again in a neat manner. The borders will then be in readiness to crop, as circumstances may require, and the whole will have a neat and orderly appearance. It is a mistaken notion to suppose that fruit-tree borders should be left uncropped; the crops generally taken off those borders are of the earliest sorts, and are all annuals, and mostly taken off for use before they have come to their full perfection; indeed many of them, such as salads, which generally occupy a large share of those borders, are used in their first stage of growth. The only crops likely to exhaust such borders are some of the brassica tribe, such as early crops of cauliflowers and cabbages; but for those crops, a sufficient quantity of nutriment is laid in for them at planting, and without the advantages of such borders, from what quarter is the gardener to expect his early culinary productions, which in themselves are, in most cases, of equal importance to fruits? We have never seen any ill effects from borders being cropped with vegetables, provided that it was not carried to the extreme; and if the trees be managed on good and proper principles, we are confident that no ill effect can be produced. However, for those borders on which peach and nectarine-trees are planted, we have already said, that dung in its simple state, should be avoided as much as possible; still, a dressing of a rich compost-mould, composed of fresh maiden loam, vegetable mould, and dung rotted to a sufficient degree, and blended together, should be annually given them, and this will be sufficient both to nourish the trees, and to produce all the culinary vegetables that are generally grown on such borders. During the summer months, these borders may rest, particularly the southern ones, as at that season few vegetables can be brought to perfection on them; but for autumn, winter, and early spring crops, they cannot be productive of any injurious effects. The necessary stirring, digging, and hoeing of the ground must be of much benefit to the trees.

RASPBERRIES.

Raspberries, where they remain unpruned, should be completed this month. Clear away all decayed stems, and leave three or four of the strongest of last year's shoots standing on each root, to bear next summer: all above that number, on every root, must be cut away close to the surface of the ground.

Each of the shoots which are left should be shortened, either now or in March (see *January*).

New plantations of raspberries may be made this month, where wanted; let them be planted in rows four feet asunder, and let the plants be three or four feet distant from each other in the rows. See *last month.*

PRUNING FIGS.

For particular remarks, see *March.*

PLANT AND PRUNE GOOSEBERRIES AND CURRANTS.

If these were omitted to be either planted or pruned last month, let that now be done. In pruning those bushes, observe to cut away all cross-growing branches, and regulate those, which advance in a straggling manner from the rest; or, where the branches stand so close as to interfere with each other, let them be thinned properly, so that every branch may stand clear of the other, at a regular distance, and prune out the superabundant, lateral, and other useless shoots of last summer. Look over the currants upon the walls, and give them a regular pruning and arrangement. Encourage young wood, particularly from the bottom, and annually cut away a sufficient portion of the old wood to make way for the young. Let the shoots be laid in about four or six inches apart, and neatly nailed to the wall.

Gooseberries and currants may be planted any time this month, if in quarters, at six or eight feet apart; if upon walls, from three to four feet. Plant currants, particularly red and white ones, on all spare pieces of wall or pales, having a northern aspect; they will, if protected by nets, keep long, and be useful in autumn. A few of these, and some of the earliest gooseberries, should be planted on a wall having a southern aspect, to come in before those in the open garden; they may be planted only for temporary purposes between any other wall trees, that have not yet filled their allotted space, and as they fill up, cut out the gooseberries and currants. Raspberries planted in this way come both early and improved.

PRUNING PEACH-TREES.

The buds of peaches and nectarines will now begin to swell, and may be pruned as directed last month. Where young maiden trees are planted, or have been planted last year, head them down according to their respective strengths. The weakest shoots to be cut back to one or two buds, and the less weak to four or five, and the more luxuriant ones may be laid in still longer, for they will naturally throw out sufficient shoots, with which to form the frame of the tree; whereas, if cut in close, it would only induce them to push of course few buds, and those too gross and strong. Strong trees are to be brought into proper habits by laying in plenty of wood, and when they fruit, allowing more to ripen than otherwise would be deemed prudent; it will check their luxuriance, and fit them for more regular treatment.

This is the time to model a peach-tree into whatever shape or habit may be required, and too much attention cannot be paid at this, and the subsequent prunings for the first three or four years. Many trees are for ever spoiled, by having their shoots laid in at full length, thus producing trees with a small portion of fruitful wood at their very extremities, while their bottom and centre are entirely naked. By judiciously shortening these trees, a sufficient supply of young wood will always be obtained, and fruit in proportion. Trees allowed to run themselves to their extremities become so weakened that they neither do nor can produce much fruit, and what little they do produce, is of very inferior quality. By good management, peach-trees will, in the third year after planting, be brought into bearing, and will continue so for many years, if the border has been prepared in a proper manner and occasionally renewed, provided care be taken to keep them full of young wood at the lower parts of the wall. When any large branch requires to be cut off, cut it close to where it arose from, leaving a neat wound, which should be painted over to prevent the moisture from getting in to cause decay. In taking out a branch of any considerable size, a space will, consequently, be left vacant upon the wall; this space must be filled up as soon as possible, and may be done by altering the branches, both above and below it, bringing the one down and the other up, so as to leave the tree as entire as possible.

Some regulation should also take place on the opposite side of the tree, by altering some of the branches, in order to give a degree of uniformity to the whole tree, and to keep up, as it were, a true balance, so that one side may not, by becoming more powerful than the other, rob it of its share of nourishment. It will, in some cases, be even necessary to thin out some of the healthy branches from the opposite side to allow of this balance, and it is on this principle of practice that some of the continental fruit-growers place the greatest importance. When peach-trees run up, as it were, to the top of the wall, leaving three-fourths of it vacant, they should be cut back as far as any young shoots or buds appear. Never head them down, as is done with apples or pears; they will seldom break again, and if they do, they will never be worth occupying a wall with: it will be better, in such cases, to root them out, as recommended last month.

DIGGING THE GROUND AMONG GOOSEBERRIES AND CURRANTS.

The pruning of these trees being finished, let the ground among them be dug over, adding manure if necessary. Dig carefully, so as not to injure the roots, and observe to bury most of the dung in the centre of the intervals, in order to feed the roots as they advance, that is, in cases where they have been planted in quarters. If planted in straight lines, or on walls, the same rule ought to be adopted, so far as not to disturb other plants. As all roots are best fed at their extremities, we recommend this mode of applying the manure to that of giving it promiscuously over all the space between the rows, and most generally close to the stem of the bushes. When these fruits are planted in quarters, they should be renewed every seven or ten years; in that case, finer fruit would be produced, and the plants could be kept within such bounds as to admit of the ground between the rows being cropped with culinary vegetables. The Lancashire connoisseurs grow their finer gooseberries in very highly manured soils, and give copious supplies of water, and often apply liquid manure. By this method, and by shading and thinning the fruit, they obtain it of such a size, that it is not surpassed in any part of the world. They not only water at the root, but often place small saucers with water under each fruit; this is what they call suckling their gooseberries. When fruit of the largest size is required, they often do not allow more than three or four berries to remain on a tree; they also cut off the greater part of the young wood, so as to throw all the nourishment possible into the fruit.

By digging the ground at this season, or during any of the winter months, such insects as may be deposited in their larvæ state in the ground will be destroyed, or buried so deeply that the heat of the sun will not be sufficiently powerful to re-animate them, at least at an early period of summer, while the leaves and shoots are in a tender state. With a view to this effect, Tweedie, an experienced gardener, pares all the earth from under the bushes to the depth of about three inches into a flat ridge between the rows; on the first dry day following, he either treads, beats, or rolls these ridges, and trenches the whole down one and a half or two spades deep, observing to tread the foul earth into the bottom of the trench.

MARCH.

PLANTING WALL, ESPALIER, AND STANDARD FRUIT-TREES.

Such of these trees as have not been planted, either in autumn or the two preceding months, should now be planted without delay, especially if it be a forward season, and before the trees are too far gone in vegetation. In all soils, this is a proper season to plant; directions for which, see the two last months.

HEADING DOWN OR RENEWING OLD FRUIT-TREES.

When trees become stinted and diseased, either by old age, bad soils, or unskilful management, they should now be headed down, or otherwise renovated, or else cleared out and young ones planted in their stead. Most trees may be renewed by heading down, which is the simplest mode, and one that is the most often adopted; indeed all trees, excepting the peach and nectarine will be much improved by being headed down, on their showing symptoms of decay or disease. In performing this operation, the whole of the head or branches of the tree should be cut off in a careful manner with a saw, if their branches be large; and with a pruning chisel, if less strong; or with a knife, if not of large dimensions; observing, in using the saw, to smoothen the wound over with a sharp knife, and to make the cut in a sloping direction, for the purpose of allowing the water to pass freely off; and after the operation is finished, paint the wound over with any mild paint, to resist all possibility of moisture lodging in the wound. In heading down, cut all the ramifications of the tree off a few inches above the graft or bud; and if it be thought necessary, from their exhausted state, let them also be carefully taken up, unless very old; their roots examined, and all diseased or bruised roots shortened or removed; at the same time replant them in either fresh mould brought from the compost-yard, or, if the soil be pretty good, only add a part of new to the old soil. If circumstances will admit, in replanting, remove the trees a little out of the spot on which they formerly grew, or if convenient, take them to a greater distance. Let them be carefully planted, as already recommended for planting fruit-trees, and a plentiful supply of water given; then, while the process of filling in the mould is going on, and after all is finished, give some water to settle the mould about the whole. At most seasons of planting, a plentiful supply of water should be given, indeed so as to form the whole mould into a thick sort of puddle. In light soils, this is of the greatest importance to the future growth of the trees, and more so in planting old trees than young ones. During the early summer months, water should be copiously given, not only at their roots, but over their heads. Some rotten dung, or littery matter, may be placed round their stems, to prevent the air and drought from penetrating to their roots; and the stems should be enveloped with old mats, or moss tied round them, and, during the ascent of the sap, kept moist by pouring water occasionally upon them. Under such treatment, fine healthy trees may again be made of those which were both diseased and barren. The training of the new shoots thus produced differs in no respect from that of young trees of the same sorts. Much has been lately said in regard to producing a state of fruitfulness in barren and unblossoming trees, and various plans have been tried with different degrees of success. Almost every description of fruit-tree will come into bearing in regular course, according to its nature, if planted in a proper soil, and one that is not too deep, provided the roots do not penetrate into a bad sub-soil, and produce canker, and finally death. A shallow soil is more likely to produce fruitful trees sooner than a deep one, and therefore care ought to be taken in planting, to prevent their roots penetrating too deeply. If they penetrate into a cankering gravel, they soon get into a diseased state, and no fruit can therefore be expected from them. And if they get too deep in a soil that is really good, they, by some means, not always obvious, acquire the power of throwing much superfluous sap into the tree, which spends itself in leaves and branches instead of blossoms. To correct this superabundance of sap, has been a consideration of the horticulturist for above a hundred and fifty years. The celebrated Evelyn recommended the system of laying bare the roots; this certainly will, in some measure, produce the desired effect, but at the same time may be productive of a worse, namely, the death of the tree. Nature has never directed the exposure of the roots, but studiously hides them from sight; but every one must have observed, that trees partially blown over, or with the earth removed from their roots, or the roots mutilated by digging too closely to them, or with their trunks or roots broken or beaten, or otherwise mutilated, are always more fruitful than others; and this, no doubt, first suggested the idea of artificial mutilation. Mutilation, both in plants and animals, is attended by a sort of maturity, and maturity, in all living things, is the period of reproduction. Nature, in all cases, when she begins to feel the effects of decay, generally makes a grand effort to reproduce its species.

Certain operations may, however, be performed, and which may justly be called the system of pruning the roots, in order to correct irregularities, and induce the stronger and almost naked roots to throw out a greater number of fibres, wherewith to collect a sufficient supply of nourishment, as well as by shortening the stronger and tap-roots from penetrating too far in search of food, and keeping up, as it were, a just proportion of roots to the branches of the tree. The branches are shortened to produce more fruitful shoots, and the stronger roots should be shortened, to cause a supply of fibrous roots to push for collecting food to nourish them. Strong naked roots collect no nourishment, but serve the no less important office of conveying that nourishment collected by the fibres to the stem of the tree, by which it is conducted to the larger branches, which, in their turn, convey it to the smaller, and they to the extremities of the buds and leaves. Transplanting trees frequently, as we have already advised, produces this effect, while it answers a no less important one, namely, that of removing the tree into fresh food, and is of all methods the most rational. Boring a hole in the stem of the tree, and driving in an oaken plug, is spoken of by Van Osten as being practised in his time. Cutting notches in the stem and branches has been recommended. Partial decortication was recommended by Arnaud d'Andilly in 1650, and of late years has been practised by many on standard fruit-trees. Stripping off pieces of the bark was recommended by Marshall. Ringing the stem and branches was known to the Romans, and is mentioned by Virgil, Columella, &c. Duhamel revived this practice amongst the moderns, and since his time, it has been practised in Holland and Germany. A. Hempel, a Saxon, so late as 1815, published an account of this practice, of which he claims to be the inventor. The use of ringing was, in all probability, introduced into England soon after Duhamel's experiments were published. Dr. Darwin, in his notes to Phytologia, describes the practice and accounts for its effects. It was brought to the notice of the Horticultural Society by a paper of the late Dr. Nöhden, and was then considered a new principle. It is now frequently practised, both for the purpose of inducing blossoms on trees, or rendering them productive, and for accelerating the maturity and increasing the size of the fruit. The former has been termed *production-ringing*, and the latter *maturation-ringing*. The former should be performed in the spring, and will produce its effects the following year; the latter mode should be performed when the plants are in blossom, and will show its effects the same season. Bending down the branches has been recommended to produce fruitfulness, by fixing balls of clay to the extremities of the shoots of young apple-trees about midsummer, which, by depressing them, is supposed to stagnate the sap and induce the production of flower-buds. The latter mode is the least objectionable, as it cannot have much effect on the health of the tree. The others are all founded on the same principle, namely, depriving the tree of health. This appears to be the conclusion drawn by Mr. Sabine upon the merits of ringing. "There is," he says, "a pear-tree against one of the walls in the kitchen-garden belonging to his Majesty at Kew, which underwent the operation of ringing about fifteen years ago. The part operated on was near the root, and as it was a principal arm, about one-half of the whole tree became influenced by the operation. This half has uniformly borne fruit, the other half has been nearly barren. The portion of stem which was laid bare was about six inches wide, and it has not again been covered with bark. That part just above the ring is considerably larger than the part below it. The ends of the branches appear in much decay, and there are but few young shoots thrown out from the sides; whilst on the other part of the tree, the shoots as usual proceed from the extremities, as well as from the sides of the main branches. I apprehend," he adds, "from the present appearance of the whole, that the portion of the tree, which by the separation of the bark, has been deprived, in a great measure, of supply from the root, cannot survive many years."

A more rational mode was adopted in the gardens of Lord Mansfield, in Perthshire, by cutting the roots of the trees nearly to their stem; and this operation was performed in the beginning of July, and with every success. It is necessary to state, that this operation was performed not only on a single tree or two, but on a wall four hundred feet long. In most cases, when barrenness proceeds from the roots absorbing a greater portion of nutriment than is really necessary, which will often be the case, when the borders are either naturally, or have been made too deep, this shortening of the roots will be of much service. But when barrenness proceeds from an insufficiency of nutriment, which is also often the case, and which is easily seen by the trees getting into a stinted state, making little or no wood, and the little that is made small and sickly, then taking up and replanting again, as advised above, is the only cure, and this system, while it induces fertility, produces first the principal cause of that fertility, by renewing the health of the tree and supplying it with proper food.

PRUNING FRUIT-TREES.

It is not yet too late to prune the trees, but the sooner it is now done the better, especially as the plums, cherries, apricots, figs, and the early kind of pears, are now coming into flower. If the orchard-trees, and the various kinds of standards, were not pruned in the preceding months, it may now be done. When, however, the branches of any kind of fruit-trees are to be anointed, it would not be proper to delay the pruning after the first week in the month, which, if it be postponed, the buds are very apt to be injured, or perhaps entirely rubbed off.

HEADING DOWN NEWLY-PLANTED FRUIT-TREES.

At the end of this month, the trees that were planted in or about the preceding October should now be headed down. On this subject Nicol very justly observes: "Trees that are intended to be trained horizontally, and have but one shoot or stem from the graft, should be headed down to four or five buds, out of which, if three spring, it is sufficient; one to be trained upright, and one on each side, horizontally. If a plant have two shoots, cut away the weakest, and treat the strongest as above. But if the plant be furnished with three shoots, (and such are always to be preferred for this mode of training,) head down the middle one only, as above, if moderately strong; but to ten or twelve inches, if very stout; and lay in the other two, right and left, perfectly level. If these be quite entire, and ripened to the extremities, they must not be shortened."

On the other hand, trees that are intended to be trained in the fan manner, having but one shoot, should be headed down to four or five buds, if they be strong, and to three or four, if they be weak, in order that the wall or rail may be filled from the bottom. Those trees which have two or three shoots, may be headed to four or five buds; from which, if they all flourish, a proper number are to be reserved for the formation of the tree.

The newly planted trees, which are two or three years from the bud or graft, should now be well cut in; that is, the shoots of last year should be shortened back to a few buds on each, for the purpose of enabling them to push the stronger, and to produce shoots to fill the wall or rail from the bottom.

GOOSEBERRIES AND CURRANTS.

The beginning of the month, finish pruning gooseberry and currant-bushes, where they have not yet been done. Keep the branches thin, and the middle open, so as to admit the sun and air freely; by which means the fruit will be large and well tasted. Observe the rules laid down in *January*.

Dig the ground between the gooseberry and currant-trees, if not done in the two former months, which, as they are just advancing in bud, will be of great service, in promoting the growth of large good fruit.

Finish planting gooseberry and currant-trees, as early in the month as convenient. See *January*, *February*, &c.

PLANTING AND PROPAGATING FIG-TREES.

This is a proper season to plant fig-trees, as those which are planted at this time are found to succeed better than if planted at any other period of the year. This tree is readily propagated either by cuttings or layers, and in either state can be procured in the public nurseries in pots, where they are grown until they have attained a proper size and age for planting. Let them be carefully turned out of the pots without disturbing the ball, and planted in any good garden-mould, observing to give them plenty of water as soon as planted. If planted against a wall, the shoots should be immediately nailed in, to prevent their being broken, to which, from their brittle nature, they are very liable. Cover the surface round their stems with rotten dung, or littery matter, to exclude the spring droughts, as directed above for other fruit-trees. Figs may now also be propagated either by cuttings of the shoots, or by laying their lower branches in pots sunk in the ground for that purpose. They will, during summer, if moderately supplied with water, strike root, and be by next spring fit for planting out if wanted; and if left for another season, be in a good state, either for that purpose or for potting in large pots for forcing.

PRUNING AND PLANTING RASPBERRIES.

Prune raspberries, observing to cut out all the dead wood; and where the live shoots, which were produced last summer, and which are the bearing wood of this year, stand too thick, let them be thinned out as in the former months, and shorten the shoots which are left.

The ground between the rows of raspberries should now be dug, it will strengthen the shoots, and add a neatness to the place.

Plantations of raspberries may be made any time this month: they will take root soon after they are planted, grow freely, and produce fruit the same year: give them some water occasionally in dry weather, till they have taken fresh root.

In planting raspberries, remember it is the young shoots which were produced from the old roots last year, that are the proper plants; choosing those, the roots of which are well furnished with fibres, and one or more buds formed at bottom for new shoots, and rejecting such as have naked, hard, woody roots. Let them be planted as mentioned in the two former months.

GRAFTING FRUIT-TREES.

Almost every cultivator of fruits has experienced some disappointment in finding, when his trees arrive at a bearing state, that many of them turn out to be very different from what he expected, and this is not often detected, particularly in the case of pears, for many years, nor until the trees have attained a large size. It is a mortifying consideration to have to root them out, and to plant others, by which he is not certain he may not be equally disappointed. The only alternative, in such cases, is to head them down, and to engraft upon their branches or stems, the scions which he may procure of the sorts desired. The operation of grafting may be successfully performed upon trees of almost any age or size, although, no doubt, the younger the tree or branches are, that are to be grafted, the greater success will attend the operation. But if properly done, it may be performed on trees of all sizes and ages with tolerable success. There are many modes of grafting; the following are in most general use.

Ring, *shoulder*, or *crown grafting*, is that in which the grafts are set in a circle, or crown, and is chiefly practised on large trees, where either the head or larger branches are cut off horizontally, and two or more shoots or scions put in, according to the size of the branch and stem. In performing this operation, the scions or grafts are cut flat on one side, with a shoulder to rest on the crown of the stock; then the rind of the stock is raised up, to admit them between the wood and the bark of the stock, which must be inserted about two inches, so that the shoulders may meet, and closely join the crown of the stock, and after the whole of the scions are inserted, all the crown of the stock should be well clayed over, leaving only two eyes of the grafts uncovered, which will be sufficient for shooting. This method of grafting was much more in use formerly than at present, owing to the bad success with which it was attended; for as the grafts are placed between the rind of the stock and the wood, they are frequently blown out by strong winds, sometimes after they are in a bearing state. Where this method is practised, the young shoots should be properly supported by stakes. It is a convenient way for grafting old trees cut down to the surface.

Cleft, or *slit-grafting*, which is performed on stocks and branches of smaller size, may be adopted with success, where the bark or rind is not too thick, by which the inner bark of the graft will be prevented from joining that of the stock. In performing this sort of grafting, the head of the stock or branch must be cut off with a slope, and a slit made the opposite way in the top of the slope, deep enough to receive the scion or graft, which should be cut sloping like a wedge, so as to fit the slit made in the stock, care being taken to leave that side of the wedge, which is to be placed outward, much thicker than the other; and in putting the scion into the slit of the stock, great care must be taken to join the rind of the scion exactly to that of the stock; for, if these do not unite, the grafts will not succeed: when this method of grafting is used to stocks that are not strong, it will be proper to make a ligature of bass, to prevent the slit of the stock from opening; after which, the whole should be clayed over, to prevent the air from penetrating the slit, so as to destroy the grafts, only leaving two eyes of the scions above the clay for shooting. It is usually performed about the beginning of March.

Whip, or *tongue-grafting*, is the most generally practised by nurserymen, especially for small stocks, or branches of an inch, half an inch, or less, as the scions much sooner cover the stocks in this method than in the others. It is performed by cutting off the head of the stocks sloping; then making a notch in the slope towards the upper part downward, a little more than half an inch deep, to receive the scion, which must be cut with the slope upward, and a slit made in this slope like a tongue, which tongue must be inserted into the slit made in the slope of the stock, and the scion be placed on one side of the stock, so as that the two rinds of both scion and stock may be equal and join together exactly; after which there should be a ligature of bass put round to fasten the scion, so as that it may not be easily displaced, the whole being afterwards clayed over as in the former methods. It may be performed in the early spring months.

Grafting by approach, inarch-grafting, is performed when the stocks that are designed to be grafted, and the tree from which the graft is to be taken, stand so near together as that their branches may be bent and united. It is commonly practised on tender exotic plants, and some other sorts which do not succeed in any of the other methods. In performing the work, a part of the stock or branch is slit off about two inches in length, a smooth part of the stock being always chosen for the purpose; then a small notch made in this slit of the stock downward, in the same manner as directed for whip-grafting; the branch of the tree designed to be inarched, having a part slit off in the same manner as the stock, and a slit made upward in it, so as to leave a tongue, which tongue should be inserted into the slit of the stock, joining their rinds equally, that they may unite well together; after which a ligature of bass should be made so as to keep them exactly in their situation, and afterwards this part of the stock clayed over well, to keep out the air. In this method of grafting, the scion is not separated from the tree until it be firmly united with the stock, nor is the head of the stock or branch, which is grafted, cut off until the same time, and only half the wood pared off with a slope, about three inches in length, and the same of the scion or graft. In this method of grafting, the operation is not performed so early in the season as the others; it being done in the month of April, when the sap is flow-ing, at which time the scion and stock will join together, and unite much sooner than at any other season or period of the year. It is principally employed in raising camellias, oranges, and other exotic trees of the harder kinds.

It has been found that the walnut, fig, and mulberry will take by this method of grafting, while neither of them succeed well in any of the other modes. Several sorts of evergreens may likewise be propagated by this method of grafting; but all the trees that are grafted in this way are weaker, and never grow to the size of those which are grafted in the other methods; therefore it is rarely practised, except on such sorts of trees as will not take by the other methods of performing the operation.

Root-grafting is performed by cutting the clean smooth roots of the stocks in pieces five or six inches long, and as large or a little larger than the graft; then they are whip-grafted, and tied together very closely, so as to prevent the wet from affecting the wounded parts, planting them so deep as that the graft, which should be four or five inches long, may be about half buried.

Side-grafting resembles whip or tongue-grafting, but differs in being performed on the side of the stock without being headed down. It is sometimes practised upon wall-trees, to fill up vacancies, and sometimes in order to have a variety of fruits on the same tree. Having fixed on those parts of the branches, where shoots are wanted to furnish the head or any part of the tree, then slope off the bark, and a little of the wood, and cut the lower ends of the scions to fit the part as near as possible, then join them to the branch, and secure them with bass, and clay them over as in other sorts of grafting.

Shoulder, or *chink-grafting*, is performed with a shoulder and sometimes with a stay at the bottom of the slope. It is chiefly used for shrubs and ornamental trees, where the scion and stock are of the same size.

Saddle-grafting is performed by first cutting the head off the stock in a wedge-like form, and then splitting up the end of the scion, and thinning off each half to a tongue-shape; it is then placed on the wedge-like stock, embracing it on each side, and the inner barks are made to join on one side of the stock, as in cleft-grafting. This is a very strong and handsome mode of grafting for standard trees, grafted at the standard height, as it makes a good finish, covering a part of the stock, which in other methods long remains a black scar, and seldom or never becomes covered with bark. The stocks for this purpose should never be much thicker than the scions. In some cases, two scions may be inserted, and the stock by that means will sooner be covered. There are two other varieties of saddle-grafting described by Mr. Knight, neither of which differs from this in the end which is to be obtained; although they are in themselves curious, and their rationale described by that eminent horticulturist in his usual masterly manner.

Peg-grafting is an old method, in which the stock being cut off horizontally, a hole is bored in the centre of it, and the scion being selected to fit the stock; within an inch and a half of its lower end, a circular incision is made, and the part between that and the end reduced so as to fit the hole in the stock. This peg filling the hole is supposed to secure the graft from the effects of winds. It is now seldom practised. Besides these modes described, there are many others. The late Professor Thouin enumerates above forty methods of grafting, besides a great many modes of budding and inarching; and M. Louis Noisette has published a description of one hundred and thirty-seven modes. These are, however, only varieties of the more common ones, and their shades of difference are so slight, or remotely connected with utility, that they do not appear to attract the attention of any but the curious, and are not likely ever to come into common practice.

Cleft, or *crown-grafting*, is the method generally adopted by those, who by this plan renovate old trees, or who, for fancy and amusement, engraft many different varieties on the same tree. If it be intended to renovate a tree, all the branches should be headed and grafted; whether it have been fan or horizontally trained. They should not be all cut to equal lengths, but to different ones, that the new wood may issue, nor all at one part, in a crowded manner, but at various heights, in order that room may be given to train it properly. Two, three, or four grafts should be put on each branch, according to its size, so that if two or three fail, the taking of one may be insured; which is generally sufficient to leave, unless it be thought expedient to leave two on the larger branches, or on the stems of those trees which have been trained horizontally, and have been headed entirely down.

In grafting on branches more than two inches diameter, crown-grafting is the method most generally used; for smaller stems or branches, cleft-grafting should be preferred.

The period or season for grafting should always be regulated by the state of the weather. From the climate being so uncertain in the spring, it is better to defer it till the circulation of the sap be brisk, and the buds of the stocks begin to break, attention being paid that the weak shoots of tender trees will not admit of being so long cut as the more hardy, and that the operation should never be performed while it actually freezes or rains.

Grafts or scions should generally be chosen from the young shoots of last summer's growth, and those from the outside or lateral branches are the best; although we have both recorded and experimental evidence to shew, that wood of more than one year, and indeed of several years' growth, will succeed. Mr. Knight, the Baron Tschoudi, and others, have grafted young shoots in leaf; and Van Mons, at Brussels, has grafted an entire tree of fifteen feet in height on the stump of another of similar diameter. But for general practice, the outside lateral shoots are preferred, because they are not so robust, nor so apt to run to wood, as those from the centre or top of the tree, nor so weak as those at its base, and under the shade and drip of the rest. Such shoots are found from experience to produce the truest specimens of the fruit of the tree from which they are taken.

An exception to this rule is to be found when the trees are in a sickly state, when, of course, the grafts should be taken from the strong shoots in the centre, or near the top of the tree. The ends of each scion should be cut off, unless it be a sort which is wished to be propagated, and only one or two scions to be had. In all cases, where there are plenty of scions, use only the middle part, rejecting both the top and base of the shoot; or if the shoots be long, and of a rare variety, they may be then cut into several lengths of six or seven inches each. They should be cut off the parent tree some time previously to their being used, experience having shown that it is necessary to allow the stock to have the advantage over the graft in forwardness of vegetation. The sap of the stock should be in active motion at the time of grafting, which would also be the case with the scion, if left on the parent tree; whereas the grafts being taken off some time before, their buds will consequently be kept back, and ready only to swell when placed upon the stock. Grafts should be collected any time in January, or the beginning of February, and kept at their whole length, laid in dry mould, in a situation where they are not exposed to either frost or much sunshine, until they be used; or they may be taken off in autumn, provided that the wood be properly ripened, and sent to any distance, having one end packed in clay, rather dry than moist, and a covering of moss over all.

The greatest care should be taken in procuring grafts, so that they come not from trees infested with insects, or of diseased habits, and also that they be cut off the tree, the sort of which is particularly wanted; and after being cut, should be immediately labeled, in a correct and legible manner, that no disappointment may occur: after having been at the expense and trouble to procure grafts from a distance, should they turn out to be different from what they were intended, such a disappointment will be great. At this season, we would recommend to have grafts of part or all of the seedling fruits planted in the shrubbery or otherwise, put on in order to prove their merits; they should not be all put on one tree, nor in one situation; some should be tried on walls, some on espaliers, and some on standards, in order that their relative merits may be ascertained. Probably the first year of their fruiting they may not be so fine, as they will be at a more mature age, therefore they should be allowed a few years, and if we find that they progressively improve, there will be some hope of having in time a new or good variety.

Implements proper for the work.—These are principally, a neat small hand-saw, for cutting off the heads of large stocks; a good strong knife, with a thick back, to make clefts in the stocks; with a sharp pen-knife, or budding-knife, to cut the grafts with; and a grafting-chisel and small mallet. Other sorts of instruments are sometimes necessary in performing particular sorts of grafting.

Besides these tools, other sorts of materials are wanted in performing the business, such as bass-strings, to tie the grafts with, which should be selected from a fresh new mat, and a quantity of good tough clay, which should be prepared a month before it is wanted, and kept turned and mixed, like mortar, every other day, in the following manner:

A quantity of strong good clay, in proportion to the quantity of trees intended to be grafted, should be provided, and some new horse-dung broken in among it; and if a little cut straw or hay be mixed amongst it, it will hold together the better. These should be well stirred together, putting water to them occasionally, in the manner of making mortar. The whole should be hollowed like a dish, filled with water, and kept every other day stirred. It should be carefully kept from being exposed to frost or drying winds; and the oftener it is wrought over the better.

The grafting-clay of the French and Dutch is composed of half cow-dung, free from litter, and half fresh loam, well incorporated. Several substitutes have been recommended for clay; for fruit-trees, however, there is not any thing better than clay, which has been so long in use. The others are used for grafting tender exotics, whose tender frames would be liable to be broken by the weight of clay necessary for the exclusion of air and moisture, which is all that the clay or any other substitute is used for. Whatever sort of clay is used, it is of the utmost importance, that it be used as soon as possible after the scion is put on, to prevent the extravasation of the sap from the wounds, the too sudden drying of the wood, and the introduction of rain-water into the wound or cleft; and whenever it is damaged by drying too soon, or other accidents, it should be instantly repaired. In very dry springs, or when the clay is not very tenacious, or any particular sort of graft, to avoid accidents, or failure, it is advisable to cover the clay with moss tied on in a neat manner, and to give frequent waterings, either with the garden-engine, or watering-pot with a fine rose. When the grafts are put on near the ground, where it is practicable, draw some of the mould round the stem of the stock, so as to cover the ball of clay; it will be of much benefit to the taking and growing of the scions.

To the amateur who objects to the use of clay, the following composition, recommended by Mr. Powell, may be considered as an excellent succedaneum. Take one pound of pitch, one pound of resin, half a pound of bees'-wax, one quarter of a pound of hogs'-lard, a quarter of a pound of turpentine, melted and mixed well together. This composition is kept in a fluid state, by putting it in an earthen pan over boiling water; with a brush it is then spread evenly on sheets of moderately thin brown paper, which, when cold, is cut into slips about three-quarters of an inch wide. The scion being fitted to the stock, take one of these slips, warm it by breathing on it, and bind it round the graft, when it will be found to serve the purpose both of matting and claying.

WATERING AND PROTECTING NEWLY-PLANTED TREES.

All fruit-trees planted in autumn, or early in the spring, should be protected from the effects of high winds, by being properly staked up, as already directed, and also occasionally watered, which will be of much importance to their breaking strong and taking properly to the soil.

DIGGING THE FRUIT-TREE BORDERS.

Dig the fruit-tree borders: this will be serviceable to the trees, and destroy weeds; and the borders will appear neat, and be ready for sowing or planting with crops of small growth, or such as will not much exhaust the soil.

Hoe the surface of such fruit-tree borders as were dug in the foregoing months, and are not sown with crops; such as radishes, spinach, lettuce, &c.

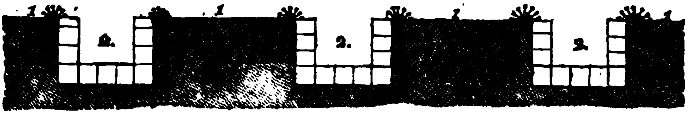
PLANTING STRAWBERRIES.

This is a good season for making new plantations of this valuable and excellent fruit. In preparing the ground for them, it is necessary that it should be trenched or deeply dug, the roots of these plants penetrating to a great depth, and at the same time well manured. They may be planted in rows at from eighteen inches to two feet apart, according to their kinds, or in beds, each containing three rows, with alleys of three feet between the beds, and the rows eighteen inches apart in the beds, and the plants twelve or fifteen inches apart in the line, according to their sort. Choose the young plants from the runners of the preceding season well rooted, and be careful not to mix the sorts, while collecting the plants. Indeed, every sort of strawberry, where it can conveniently be done, should be grown in separate beds, and at such a distance, as will prevent their running into one another. Never plant old plants by any means, but have the runners of the preceding season taken off when well rooted, and put into nursing-beds, to gain strength, they will be in good condition to plant in spring. The duration of strawberry-beds depends on a variety of circumstances, sometimes they will last for ten, twelve, or more years, and often only for two or three crops; and some cultivators only allow them to remain on the ground one year. The Rev. Thos. Garnier, of Stoke, near Southampton, a successful cultivator of this fruit, destroys all his beds early in August, as soon as the gatherings are over, and then proceeds to form new ones by trenching and manuring them; he selects his plants from the strongest runners of the old rejected plants. If the weather should be particularly hot, and the surface of the ground much parched, he defers the operation of preparing and planting his beds till the ground be moistened with rain. Such is the simple mode of treatment which he has adopted for several successive years, and such is his success, that he produces a greater quantity of excellent fruit on a given piece of ground than that of any other gardener in the county. Depth of soil, he observes, is absolutely necessary, and in his opinion, it is needless to plant many of the better kinds of strawberries, where it is not of a considerable depth. In this we perfectly agree with Mr. Garnier, and must observe, that the finest and greatest crops of this fruit we ever saw, were in his garden. It is not generally known, but it is an ascertained fact, that most strawberries generate roots, and strike them into the ground nearly two feet deep in the course of the season. The pine, Grove End, and roseberry, succeed better than any other in stiff and shallow soils, and should be planted in an open situation, and not in one too much shaded. Many sorts of strawberry are now raised annually from seed, which is sown when the fruit is ripe. Plants are produced to plant out at this time, and if planted in rather a moist situation, will produce abundance of fine-flavoured fruit the following autumn. The Alpine strawberry should always be raised from seeds, and differs from all others of the same family, inasmuch that it produces abundance of fruit the same season that it is sown. For this purpose, it is sown in spring, on a bed of rich earth, and sometimes in pans or shallow boxes, where, in the latter way, it is forwarded, by being placed in some of the forcing departments, not too warm, and when above ground gradually hardened to the open air. By such means, it gets rather stronger than those reared on a bed of light earth out of doors. In July, or August, they are, in either case, fit to plant out for good, which is generally done in a shaded situation, either behind a wall, or hedge, in rich moist soil, allowing the plants two feet apart, row from row, and one foot apart in the line. In this way, abundant crops are obtained, and will continue bearing until destroyed by the frost. The season of this fine fruit can thus be prolonged for a considerable time: forced roseberries, pines, or Alpines, being ripe in March, and the seedling Alpines in fruit till the middle of November. In making plantations of this fruit, plenty of room should be allowed them, that they may not be destroyed in the process of watering or gathering them. The hautboy generally thrives best in light soils, and cannot be scarcely over-dunged, as it is not so likely to be thrown into a superfluity of leaves by manure as some of the others. There are various sorts of this species, all of them esteemed for their fine flavor; one variety has the parts of fructification so perfect, that it bears plentifully, being capable of fecundating itself; while some other varieties are so imperfect, that they contain the male parts in one flower, and the female in another. Still those latter varieties are reckoned the finest flavored fruit. Keen, a respectable market-gardener, and a successful cultivator of this fruit, observes, that great care is necessary to be taken in selecting young plants of these sorts for making out new plantations; that there be a proper proportion of male plants to the female, not having too many of the former, as they bear no fruit, and are more prone to run into leaves and runners than the other. He considers, that the proportions ought to be one male to ten females, and states his experience for making such a choice. Having formerly been in the habit of selecting female plants alone for his beds, he failed in being able to procure crops; but in 1809, suspecting his error, he obtained some male blossoms, which he placed in a bottle on the bed of female hautboys. In a few days, he perceived the fruit near the bottle to swell. On this observation, he procured more male blossoms, and in like manner placed them in bottles in different parts of the beds, removing the bottles to fresh places every morning, and by this means obtained a moderate crop where he had no fruit the preceding year.

In making out fresh strawberry plantations, attention should be paid to the above, as far as regards this species of strawberry. The distinctions between the sexes can be most readily observed while in flower, and the plants should be then marked; or in selecting them while in fruit, choose ten young plants from those which bear fruit, and one from those which are barren.

Strawberries require a larger portion of water than almost any other of our cultivated fruits to bring their crops to perfection. A considerable expense is incurred on this account by the strawberry-growers in the vicinity of London and Edinburgh. They seldom have the opportunity of selecting a naturally moist situation for this fruit, and the formation of an artificial strawberry-garden would be attended with too much expense for them, the quantity which they cultivate being so great. A very rational and useful strawberry-garden is described by W. Atkinson, Esq., in the Horticultural Transactions, Vol. V. p. 191, which was observed by that scientific gentleman some years ago, in the vicinity of Chatham, and was the invention of a person at that place.

The beds (1) were on flat ground, each about three feet wide; between them were trenches, (2) about nine inches wide, and four-inch walls of brick-work on each side, to keep up the earth of the beds. These trenches were about the depth of two or three courses of brick laid flat without mortar, and were intended for the purpose of holding water, which was supplied from a pump whenever the ground was dry, while the plants were in fruit.



In Devonshire, the same gentleman observes, that strawberry-beds are constructed against the side of a hill or bank, by building up beds in steps, with rough granite at the front to keep up the earth, each step being about two feet high, and three feet wide. These steps are filled with good loam, and the surfaces of the beds covered with rough pieces of granite bedded into the loam, leaving openings between the stones, just sufficient to put in the plants. The surface being thus covered with stones, the ground is thereby kept moist, and the fruit always clean. Beds on this plan might be readily made in any situation, by using bricks or any kind of stone for keeping up the mould, and covering the surface with tiles or pebbles, or any sort of stone most convenient. This will not only be a great saving of labor in watering, but, if neatly done, will be a convenient mode of cultivating them, and the fruit may be gathered without any chance of treading on it. If a situation were provided, either with a natural spring or stream of water upon the top of such a bank, it might, with little trouble, be made to irrigate the beds, when in bloom, or the fruit swelling; and if let off when nearly ripe, the reflection of the sun, if the bank sloped towards the south, would be such as not only to give a high flavor to the fruit, but also very much to accelerate its ripening. In such cases, where water cannot be got naturally, a pump, such as is described for the Chatham strawberry-beds, might be used.

We have always considered a strawberry-garden to be a desideratum; and the advantages gained would repay both the expense and the trouble of its formation. It would be of great importance to have it so constructed, that the beds might be supplied with plenty of water at the least possible expense. Either of the above methods would answer well, or if there be the convenience of a small island in a pond or piece of water, it would be an admirable situation for a strawberry-garden, and would answer the purpose, provided that the surface was not too high above the level of the water. In such a situation, beds made in the common way would answer very well, as the roots of the plants would get down into a cool wet bottom, which they are fond of in summer. In winter, when they might probably suffer from being too long kept wet, the water might be let down to a lower level; but if the plantations be annually made, this precaution would not be necessary. Strawberries may be secured from the attacks of birds by surrounding the compartment, where they are grown, with wattled hurdles, made close on purpose, or rendered so by drawing in a few branches in the places at which birds might penetrate, placing them upright like a fold, and then covering the whole top surface with netting, supported high enough to admit of getting conveniently to gather the fruit. The fruit of Alpine strawberries, and probably some of the other prolific sorts, may be retarded till late in the season, by going over the plants in May, or when they come into blossom, and carefully cutting off all the bloom with a pair of scissars, preserving the leaves as much from injury as possible; this is repeated until towards the middle of June, when more blossoms appear, and those are left to produce fruit, which they readily do until destroyed by the autumnal frosts.

APRIL.

PROTECTING THE BLOSSOMS OF FRUIT-TREES.

The pruning and nailing of all fruit-trees being finished last month, many of the earlier kinds will now be coming into blossom, and in this precarious climate will, in many situations, require protection from cutting winds, as well as from the effects of frosts, which of late years have cut off the crops of fruit while in their tender state; and in many of the finer sorts of fruits, such as peaches, nectarines, &c., done much injury to the expanding shoots. Various have been the opinions of the propriety or impropriety of protecting trees, and as many plans have been recommended as there have been opinions advanced on the subject. The majority of practical gardeners, however, agree in the propriety of protecting, by some means or other, the blossoms and young shoots of all their tender trees. In situations, so happily placed as to render shelter unnecessary, much labour and expense will be saved, and the trees upon the whole will be less injured, than by the most ingenious mode of covering that could be adopted. Upon a subject of so much importance, we will give the substance of the different modes pursued with as much brevity as possible.

The most simple and primitive mode is, that of covering with fronts of ferns, spruce, or other branches, stuck in amongst the branches of the trees, and generally remain until all danger from frost is supposed to be past. This is done on a rational principle in Sweden, Denmark, and other parts of the north of Europe, to retard the blossom by excluding the rays of the sun, which often, at this early season, shine with great warmth throughout the day, by which the sap is set in motion and the flowers are induced to expand, while the nights follow with severe frosts, and either destroy the fertilizing pollen of the male parts of the fructification, or render them unfit for their important offices, by which the chance of fruit is entirely destroyed; the sap once set in motion, the young tender shoots push forth, and are destroyed by the frost, which nightly follows. By retarding the motion of the sap; by excluding the trees from the effects of sunshine at this early period, and detaining them, as it were, by apparently continuing the winter; they are thus retarded, until the danger of frosts be past, and then allowed to break into bud and blossom, at a season more congenial to their natures. This principle has been acted upon in Scotland, and in some parts of England, to a considerable extent. Of all sorts of branches used for this purpose, we would recommend those of the common fern, *Pteris aqulina*, as being lighter, and therefore not so liable to injure the buds by being blown against them with high winds. But we consider this plan objectionable, as it shades the bloom too much, and too constantly from the light, by which the buds are rendered weak, and the fruit produced often drops off in a premature state; and it is probable, that the crop would have been as good, had the trees been left to take their chance.

Protecting with straw-ropes has been recommended in the Transactions of the Horticultural Society, and is performed by placing poles in front of the trees against the walls, at four or six feet apart, one end being fixed in the ground about a foot from the wall, and the other to the top of the wall with a nail. A quantity of straw or hay-ropes are then prepared, and passed from pole to pole, taking a turn round each all the length of the wall; about eighteen inches above that, is placed another row of rope in a similar manner, and so on until all the length of the pole or height of the wall is completed.

Protecting with nets is often practised, and was recommended by the late Mr. Nicol. The old nets used for protecting fruits from the attacks of birds, are hung over the trees sometimes doubled or trebled, according to the quantity to be had. In screening with nets of any kind, they are to remain on day and night, until all danger of frost be over. Nets are very good screens if properly put on; they are generally put on in a very careless manner, without any seeming consideration of the actual cause. They are generally hung over close to the branches, the flowering-buds often sticking out beyond the nets, which of course derive no benefit from them. Instead of being hung up in so unmeaning a manner, they should be placed out at the distance of fifteen or eighteen inches from the walls, by means of sticks of that length placed with their but-end against the wall, and their other end either slit or having a natural fork to keep the net more steadily out; and these placed at the distance of two or three feet apart. In putting on the nets they should be put on pretty tight at first, and their ends nailed close to the wall on all sides, then these sticks put in to keep them from the wall, will tighten them up sufficiently to render them steady, that no wind can displace them.

Nets made of woollen yarn are much better than any other sort of net, and may be made or purchased at a trifling expense, and will last for many years. These nets are in general use in Scotland, and in some places in England. The advantage they have over nets made of flax or hemp is, that their meshes are rendered much smaller than they really are by the bristleness of the material, and its constant tendency to contract; and by its disposition to attract moisture, such as cold dews and hoar-frost, protects the blossom, while a sufficient portion of light gets in to the trees. It may be rendered more or less close in texture by tightening or loosening it, according to circumstances. This simple contrivance was invented, in 1805, by two ladies in Perthshire, for their brother's garden. Nets made of straw are used in the Dalkeith gardens, and of bass in the gardens of Sweden.

Protecting the blossom with mats is a common method, but is very troublesome, and in the end expensive. Protecting by means of oil-paper frames is adopted in some places with success. These frames are made like common sashes, only very slight, and are covered with common printing paper of the cheapest quality, which after being pasted on, is painted over with boiled linseed-oil. These frames are placed in front of the trees, and made moveable by contrivances, which must vary according to circumstances. If the slope from the wall be considerable, a few frames must be made to fit the spaces at the ends. These frames are not put on until the blossoms are pretty well expanded; till which time they are not very apt to suffer by hail-showers, frost, &c. In this way, there is much less danger of rendering the blossoms delicate by the covering, than if it were applied at an earlier period. These frames, if taken care of, will last for many years, and will be useful for ripening melons, cucumbers, or protecting flowers, and many such purposes.

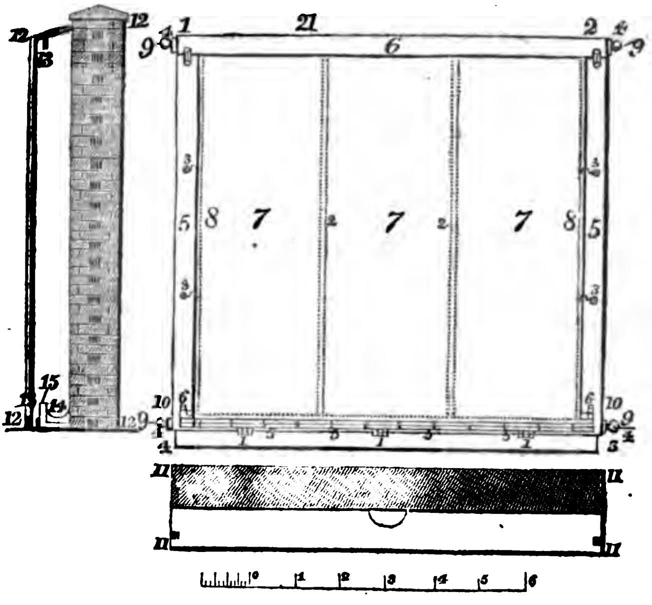
The bad effects of frost in still weather, which may be said to fall perpendicularly, may be guarded against by fixing a temporary coping of boards to the top of the wall, so as to project a foot or a foot and a half over the trees, and may be removed when all danger of such frosts are over; but these perpendicular frosts are less injurious than cutting frosty winds, which, while they prevail, to a certain degree, blast every species of vegetation.

The most effectual guard against the ill effects of frost and winds, at this season, is canvas screens, recommended by Nicol, which, while they break the force of the winds, and sufficiently guard off the frost, do not prevent a sufficient quantity of light from penetrating to the trees. The cloth for this purpose should be very thin, like what is called bunting; and that it may last the longer, and admit more light, it should be oiled.

The screens may either be fixed in frames, or may be put up in single sheets, and be made to answer for one or for several trees, as they may happen to be placed on the wall. In either case, they should be placed clear of the tree, that is, about the distance of a foot at top, and eighteen inches at bottom. If in frames, they may be made to move in the manner of a common sash, between rafters, and may be double, as in windows, to go either up or down, in order to admit air. The rafters being made moveable, the whole may be removed or put up at pleasure, and if carefully dried, and packed up in a dry room, when not in use, will last many years. If the screens be made in sheets, they may be mounted upon rollers at the top of the wall, and lowered or taken up at pleasure; but in this case, it is also necessary to have a set of slight rafters, or neat poles, laid against the walls at proper distances, to prevent the wind from dashing the canvas against the trees, the effects of which are too obvious to mention.

These sheets may be of any convenient length, and made to cover one or more trees, as may be required. If the trees be planted according to their several kinds, as we have recommended, then the whole space may be covered with one or more pieces of this covering, and will be more convenient than if the trees were scattered about on different parts of the walls. In using these screens in either of the above forms, the trees are always to be exposed to the light and air, in good weather, through the day, covering only at night and in bad weather, applying them from the time the buds begin to open, till the fruit be fairly set, or till all danger from the effects of frost be past.

A frame for the protection of fruit-trees on walls has been invented by Mr. John Dick, gardener at Ballindean, in Perthshire, which although at first sight may appear rather intricate, yet will be easily understood by the accompanying sketch.



It is made of thin semi-transparent canvass, about 36 inches broad. The edges and seams of the screen are bound with tape, and it runs on two wires placed at top and bottom of the frame, and kept tight by screws at the extremities.

1. 2. 3. 4. are the four corners of the wooden frame, when joined together and fixed upon the wall.

5. 5. are wooden facings fixed on the front edge of the sides of the frame for the reception of the screen within them.

6. 1. 1. 1. are similar facings on the top and bottom, but moveable on hinges, shewn at 1. 1. 1. for the convenience of putting the rings of the screen upon the iron wires 9. 9. 9. 9.

7. 7. 7. are the breadths of the screen, strengthened by slips of tape 2. 2. sewed upon the seams.

8. 8. are the two upright pieces of wood, to which the screen is nailed, which slide under the facings 5. 5., and are secured by the hasps 3. 3. 3. 3.

9. 9. 9. 9. are the iron wires on which the screen slides, by means of rings.

4. 4. 4. 4. are thumb-screws, for tightening the wires and preventing them from relaxing.

5. 5. 5. 5. are the rings upon the bottom wire. When the screen is adjusted, the lower facing 1. 1. 1. is folded up to 10. 10., and fastened with square buttons 6. 6.

11. 11. 11. 11. the plan of the wall and the bottom of the frame, with a semi-circular hole cut in the latter, sufficiently large to receive the stem of the tree, and thus to prevent the frame being fixed close to the wall.

12. 12. 12. 12. the section of a side of the frame and of the wall.

13. 13. are the top and bottom stops, to keep the screen in its place.

14. is a piece of cloth loosely suspended between the wall and the upright stake 15, to receive the fruit that falls off the tree; the stake 15 is repeated at convenient distances in the frame.

This frame has been tried in the gardens of the Horticultural Society, and found perfectly to answer.

The sudden transition from cold to heat, which we experience in the sultry hot sunny days of spring succeeding frosty nights, is the principal cause of the failure of crops of our finer fruits in the open air. The blossoms get frozen through the night, and the sun acting with all its power on them in the morning before they are at all thawed, destroys many, and injures the rest. The effects of shading, of whatever sort, counteracts this evil less or more, as by it the frost may be prevented from injuring the blossoms; or, when they have been affected, by shading them from the sun's rays, until they become gradually thawed. The frequent occurrence of this circumstance has led to the adoption of a very rational mode of cure, by thoroughly watering the blossom or young fruits with cold water, applied with a garden-engine, in the morning, before the sun shines upon them. If the blossom, or even the fruit, be discolored, this application of cold water recovers them; but it is necessary, that this be done before the sun shines upon them. Sometimes one watering will not be enough to recover the parts affected, in such cases, it must be repeated two or three times, until every appearance of frost be gone, and the blossoms or fruit attain their proper color. The operation of watering before sun-rise, in counteracting the frost, seems to produce its effects in a manner similar to the application of cold water to a frozen joint or limb, which is injured by the sudden application of warmth. This plan has been long adopted by the London nurserymen, when their plants have been affected by frost during the night, and is attended with the most marked success. Vegetables of any sort may be recovered by this application, and it should be attended to by the gardener both in spring and autumn.

WATERING NEWLY-PLANTED FRUIT-TREES.

Any of the fruit-trees that have been omitted to be headed down last month, should be done now as soon as possible, and all newly-planted trees attended to in regard to watering, which must be repeated as the state of the weather may require.

DESTROYING INSECTS ON FRUIT-TREES AND BUSHES.

Insects of many species will now begin to make their appearance; therefore, to keep these intruders under, it is necessary to begin upon their first appearance, and continue diligently to watch their progress during the season. Most of them only live for one season, but their powers of reproduction are so great, that no time should be lost in destroying them as they appear, or in removing all appearances of them in a yet imperfect state. That industrious naturalist, Leuwenhoeck, by calculation discovered that two house-flies, a male and female, will, in three months' time, produce no less than seven hundred thousand of its species. The insects most injurious to the productions of the garden are: the red spider, (*Acarus tellurius*, of Linnæus,) (*Aphis lanigera,*) or American blight; the wasp (*Vesha vulgaris*, of Linn.); the earwig, (*Forficula auricularia*); the bug, (*Cimex*); the thrips, the chermes, the cabbage-moth (*Phalænæ oleracca*); the gooseberry-moth (*Phalænæ wavaria*); the currant-moth (*Phalænæ grossulariæ*); and the codling-moth, very common on fruit-trees (*Phalænæ pomonella*); the wood-louse (*Oniscus*); the earth-worm (*Lumbricus*); the slug (*Limax*); and the snail (*Helix*); the ant (*Formica*); and caterpillars (*Papilio*); the aphides, or green-fly, and grubs, or the larvæ of the beetle (*Scarabœus*) tribe.

The destruction of these insects ought now to occupy our attention, and will be no difficult matter, if taken in time. The red spider makes its appearance in dry hot weather, on peach, nectarine, and many other trees and plants; and, as Nicol observes, is always found on the under sides of leaves, but most often on rough downy leaves, where it is protected in its young state by the hair on the leaves. This, however, is not without an exception, for we find it also on leaves perfectly smooth, and devoid of all covering. Its attacks are less frequent upon the apricot, than on most other fruit-trees. It is amongst the smallest of the genus, and is not easily distinguished without the assistance of the microscope. If the back of the leaf be viewed by the aid of that instrument, it will appear full of its webs, and if many abound on it, the leaf appears full of punctures, becomes discolored and brown on the upper surface, fades and falls off. This insect is more troublesome in hot-houses than out of doors, and more in dry warm seasons, than in moist and cold ones. Water has been considered to be the only cure, and it must be used in considerable quantities. If the insect has got once established on the leaves, it is not mere sprinkling that will dislodge it; it must have the water applied with force from the garden-engine, and that in a considerable quantity, and repeated twice each day, or oftener, first working the engine from the right hand side of the tree, and then from the left, so that no part of the leaves can escape a general washing. If this be properly attended to, it will not only keep the insect off altogether, but will drive it off, however strong it may be. It is of much consequence to the trees that it be not allowed to gain a-head, for in that case, many of the leaves will fall off, or be unable to perform their functions, and consequently the tree must suffer a great check. The operation of washing should be performed in the evening, particularly as at that time the effects of the moisture will not be so soon lost; but if there be any appearance of frost, it had better be done early in the morning, before the sun has any effect upon the trees.

The *Acarus holosericus*, or scarlet acarus, an insect similar to the red spider, and belonging to the same genus, is equally destructive to fruit-trees, and is often by gardeners confounded with it. Water is the only cure for it, applied in the same way as for the red spider.

Wasps will be considered more fully, when we come to treat of their attacks upon ripe fruits. In the mean time, care should be taken to destroy every one that makes its appearance, for by destroying one at this season, a whole nest is thereby prevented from being formed. To promote their destruction, an equal sum ought to be given to the destroyer of a queen wasp at this season, as for a nest in autumn. Nothing has been found to keep down this troublesome insect so effectually, as remunerating the operatives in and about the garden with so much money for each insect destroyed at this season, as well as for each nest when fully formed.

Ear-wigs.—As the ear-wig retires during the day to hide in some hole, it may be caught by hanging bean-stalks, cut into short lengths, in various parts of the tree or plant that it infests, into which it is almost sure to go, and upon examining them they may be taken out and destroyed. They are very destructive to flowers, more so than fruits, and are carefully sought after by the florist.

The *bug* or *coccus genus.*—Of this genus, there are several species, chiefly named from the plants on which they feed, such as the pine-bug, vine-bug, orange-bug, and peach-bug; the three first are generally found in hot-houses, and will be noticed in the *Forcing-garden*. The bug found upon the peach should be brushed or rubbed off, and if that practice be persevered in, it will soon clear the trees of them. All washes and powders are to be considered merely as palliatives; nothing will eradicate these insects equally to picking them off.

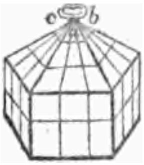
The *Thrips genus* consists of very small insects, which are sometimes very troublesome in melon and cucumber frames. Water dashed upon the leaves will drive them off, and fumigations of tobacco may also be used. The shoots and leaves, which they attack, become shrivelled, brown, and pulverize between the fingers, as if they were burnt. They are curious insects when viewed through the microscope. They have four wings, and walk with the lower part of their body turned upward.

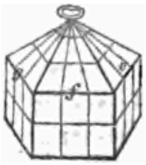
The *Chermes*, is a genus very generally confounded with the aphis. It also inhabits the leaves and stems of plants, and by its punctures produces excrescences of various sizes and shapes, which generally contain the egg or immature insect in the larva state. Its destruction is similar to that of the aphis.

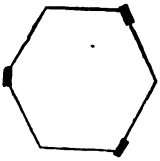
The genus of *Phalænæ*, or moths.—Of these, the cabbage, gooseberry, currant, and codling-moths, are most destructive to garden productions; and, in their caterpillar state, are found on the leaves of the plants, on which they feed, and from which they derive their name. In the latter part of summer they are to be picked off by the hand, or where the leaves are much eaten with them, may be gathered off and carried away. Young ducks, and other domesticated birds, will help to keep them down.

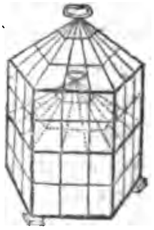
Catching the winged insect is found to be the most effectual method of keeping under these insects. This is done by using a gauze net, which should not be above three or four feet in circumference, eighteen inches or more deep, and attached to a whalebone rim or hoop; the handle should be six feet long; with this net, a boy should be kept going round the garden, and when the insects, in their butterfly or moth state, are flying about, he can with little difficulty catch and destroy them. Thus for every female destroyed in spring, or early in summer, before they lay their eggs, we destroy many hundred caterpillars.

The following ingenious method of catching winged insects in gardens, is recommended, in the Gardeners' Magazine, by Mr. John Wilson, of Welbeck Gardens, Notts. Take a common hand-glass, the hexagonal or any other form will do, remove in the apex the whole or part of three of the panes (*a b c*), then take a second hand-glass, which must be of the same form as the first, and place it on the roof of the first, so that the sides of the one may coincide with the sides of the other; then all the interstices between the bottom of the one and the eaves of the other (at *e f g*) must be stopped with moss, wool, or any suitable substance, which will prevent the entrance or exit of the flies. The bottom hand-glass must rest on three pieces of bricks to form an opening underneath. The appearance of the trap, when completed, is simply that of one hand-glass above another.









Fragments of waste fruit are laid on the ground, under the bottom hand-glass, to attract the flies, which having once entered, never descend again to get out, but rise into the upper glass, and buzz about under its roof, till, fatigued and exhausted, they drop down, and are seen lying dead on the roof of the under glass. One of these traps placed conspicuously on the ground, before a fruit-wall or hot-house, acts a decoy. It is surprising to see the eagerness with which all kinds of insects go to examine it, and seeing various kinds of their fellows within, they enter also, and flying upwards buzz through the open panes (*a b c*), and perish altogether in the cavity between the two hand-glasses.

The *Wood-louse* (*Oniscus*) is of retired habits, shunning the light and heat of the sun. It is easily caught by placing bundles of reeds, or bean-stalks, in which to shelter itself, like the ear-wig, which is already described.

The *Earth-worm* (*Lumbricus*), the *Slug* (*Limax*), and the *Snail* (*Helex*), are all injurious to gardens, the former to gravel and grass-walks and lawns, as well as to tender plants. The second extremely destructive to every species almost of vegetables, and the third to vegetables and fruits. The former are readily destroyed by watering the ground in which they inhabit with lime-water. The second and third are only to be subdued by carefully picking them up, and either destroying them, or carrying them to such a distance from the garden, that there will be little chance of their getting back.

It is remarked of the common garden-snail, (*Helex hortensis*,) that having once attacked a leaf or fruit, it will not begin on another until the first be wholly eaten.

Ants (*Formica*).—This industrious species of insect is, in light sandy soils, often very abundant. Some say, that they eat and help to keep down the aphides; at all events, wherever the one appears in any quantity, the other is sure soon to follow. They sometimes, however, commit sad depredations on ripe fruit, excavating the whole of the interior with such nicety, that it is not till the hand be put to pull the fruit, that the theft is discovered. Their nests may be destroyed by pouring hot water over them, or burning a quantity of straw or any light matter over them. If a piece of cord dipt in tar be tied round the stem of the tree, they will not ascend it.

Mr. Wilmot's method of destroying ants, in the open garden, is, by taking a straight rod, such as the handle of a hoe or rake, and pushing it down two feet, so as to leave an open round hole of that depth, the ants will precipitate themselves into the hole, and from the smoothness of its sides be unable to get up. Once a day, some water may be poured into the hole, to drown what are there, and the round stick reinserted, so as to maintain the smoothness of its sides. This mode is known to several gardeners. Another mode is by placing saucers, with sweet or other oil, in different places, either in the open air, or in hot-houses, which will destroy ants, beetles, crickets, and other insects, the margin of the oil being sprinkled with a little sugar.

Caterpillars, which are the larvæ or young of the *papilio* genus, are very destructive, and various means have been tried to destroy them. As their whole employment seems to be eating, when they meet with food that suits their palates, they are extremely voracious, and will soon leave leafless any plant, bush, or tree, on which they begin their ravages. But nature has provided a wise restraint on their propagation by also forming other insects which keep them within due bounds. These insects deposit their eggs in the bodies of caterpillars: from these eggs proceed small maggots, which gradually devour the vitals of the animal in which they reside. When about to be transformed into a chrysalis, they pierce the skin of the caterpillar, spin their pods, and remain on the empty skin till they assume the form of flies, and escape into the air to perform the same office to another unfortunate larva. But to man, there is room left to exercise his reason, in devising means for their destruction. Lime-water has been used, which will destroy a great part; tobacco-water will destroy more; but the most efficacious plan is to employ a few children in the garden for a few days to pick them up, and afterwards to destroy them. The garden-engine, used with the greatest force upon the bushes, will wash off many of them, but picking we have always found the most certain in the end.

In the Agricultural Journal of Bavaria, the following method is given for the destruction of caterpillars in an orchard:—Plant according to the size of the orchard, from one to four plants of bird-cherry (*Prunus Padus*); almost the whole of the caterpillars and butterflies within one or two hundred yards will resort to that plant. The appearance of the bird-cherry will be hideous, but the fruit-trees will be safe.

The *Aphides*, or what is more generally known as the green fly, black fly, &c., two species of the same genus, may be destroyed by the same means. They are destructive, and annoy almost all sorts of fruit-trees, and many herbaceous and flowering plants. They attack the young tips of the tender wood, and, if not soon destroyed, will ruin the tree. This insect is not so difficult to eradicate as some of those already noticed. The fumigation of tobacco will completely destroy them, and without in the least injuring the tree. In hot-houses, the fumigation is easily performed, but upon the open wall, the task is more difficult. However, as fumigation is found to be the most effectual and expeditious mode, arrangements must be made to confine the smoke for a sufficient time near the trees to destroy them; for which purpose, spread an oil-cloth over the tree or trees intended to be operated upon, which fasten closely round the edges, so as to prevent as small a quantity as possible of the smoke from escaping; apply the smoke at the bottom, it will ascend to the top of the trees, and if confined for a short time, will completely destroy every aphis on the trees. After the fumigation, apply the garden-engine with force, which will wash off all that have not already fallen to the ground. It is of the utmost importance that this operation be performed on the first discovery of the enemy, as at that time a less quantity of tobacco will be used, and the trees less injured. Where the convenience of oil-cloths is not to be had, then garden-mats, doubled or trebled, will answer the same purpose. The more effectually to destroy them, and prevent any chance of those which have been stunned from again ascending the trees, dig the ground lightly at the bottom of the wall, which will bury every one of them. This operation is often performed with a pair of fumigating-bellows; but for extensive fumigations, we always prefer one or more small garden flower-pots, about six inches in diameter, having a hole drilled through it, near the bottom, of about three-quarters of an inch in diameter, being sufficiently large to admit the point of a pair of common bellows. The tobacco, which should be either the strongest roll, or tobacco-paper, which can be purchased at the tobacco-manufacturers for much less than the tobacco itself, should be put into the pot, in quantity depending on the size or number of trees to be fumigated; or if the roll-tobacco be used, unrol it, and tear the leaves into pieces, which will cause it to burn better; put this into the pot, and with it a portion of damp hay, or any strong disagreeable smelling herbs, such as tansey, &c.; this will add to the quantity of smoke, and the smoke of tobacco diffused along with it, will soon destroy all the aphides upon the trees. Choose a dull cloudy evening for this purpose; but if the trees be badly infested, do not delay the operation on account of the weather, for it were better to burn an additional pound of tobacco than to allow the enemy a single day to gain strength. Small trees, or bushes, may be fumigated in this way, by throwing canvas, or oiled cloth, or mats, over them, and applying the smoke in the same way.

In regard to the cure of the *Aphis lanigera*, or American blight, the following method is recommended by Mr. James Dann, gardener to the Earl Mann Cornwallis, at Linton Place:

The method which he pursues is, invariably, first to scrape off with a blunt instrument, all lichens, and loose or rotten bark from the stems and branches, then pare off the edges of the cankered holes, and other excrescences, where it is possible for the aphis, or any other insect, to lodge in; and with a woodman's racer, gouge, or chisel, scoop out all the cankered and rotten wood, until a clean live surface be found at the bottom of each cankered part. Wanton lacerations are, however, by no means recommended.

By adopting the above method, and using the under-mentioned medicament, Mr. Dann engages to bring sound wood in the stems and branches of fruit-trees in general; though after the operation of cleansing the wounded parts, there may not be more than one inch of sound bark to carry on the circulation of the sap, provided the stems or branches be properly supported.

Take two quarts of vegetable tar, half an ounce of corrosive sublimate, half an ounce of spirit of salt, and one gill of spirit of hartshorn.

The sublimate must be pounded in a marble mortar, adding the spirit of salt by degrees to dissolve the mercury; next add the hartshorn, rubbing altogether until completely mixed. Provide an earthen glazed pipkin, and put in the poisonous liquid; add the tar by degrees, constantly stirring it to prevent its running over. Then take an old painter's brush, and cover all the wounded parts with the mixture, which will adhere and give way to nothing but the growing wood and bark. It is necessary to use earthenware, as the mercury will corrode metal or wood.

Wherever this mixture is applied, it will infallibly destroy the aphis, or any other insect, and prevent emigrants from infested trees lodging on the wounded parts, or feeding on the juices of the young growing bark, owing to its poisonous quality. No person need be afraid of any mischief to any domestic animal, as the noxious smell and taste of the tar prevent every danger.

Grubs, which are the larvæ of beetles, are very destructive to the roots of plants. Of this genus the most common is the *scarabæus melolentha,* the eggs of which species are deposited in the ground by the parent insect, which, from its form, is well calculated for burrowing. From each of these eggs proceeds a whitish worm, which is destined to live in the earth in that form for four years, and in that time undergoes various changes of its skin until it assumes its chrysalid form. These creatures, in immense numbers, work beneath the turf in rich meadows, devouring the roots of the grass to such a degree, that the turf may be rolled up almost with as much ease, as if it had been cut with the spade or turfing-iron; and underneath, the soil appears turned into a soft mould for about an inch in depth. In this, the grub lies in a curved position on its back, the head and tail uppermost, and the rest of the body buried in the mould. Such are the devastations committed by the grubs of the cock-chaffer, that whole fields of grass, in the summer season, become in a few weeks as dry and brittle as withered hay, occasioned by these grubs devouring the roots, and destroying all those fibres which fastened it to the ground. The larvæ having continued four years in the ground, undergo another change, to effect which, they dig deep into the ground, sometimes five or six feet, and there spin a smooth case, in which they change into a chrysalis. They remain in this state all the winter, till about the month of February, when they become perfect beetles, but with their bodies quite soft and white. In May, their parts are hardened, and then they come forth out of the earth. This accounts for our not finding the perfect insect in the ground. This species of beetle should be destroyed wherever it appears, as the means of lessening its depredations. When it appears in fields, the ground should be fallowed, and, by these means, bring the grubs to the surface, so that crows, and other birds can get at them, of which they are remarkably fond. In gardens, they often occur, and should be picked up, and destroyed the moment they are detected. Indeed, every species of grub, which is turned up in digging, should be destroyed.

WATERING NEWLY-PLANTED BUSHES.

Currants, gooseberries, and raspberries, which were planted last month, or in autumn, should be attended to with water; and where any of these remain unplanted, it should now be done, observing, in planting them, to water, or puddle-plant them, as already directed.

PLANTING STRAWBERRIES.

Strawberries should be planted the beginning of this month, if wanted, and the established plants cleared of all weeds, and the earth often stirred up about them. When strawberries are planted at this season, observe to puddle the roots well before planting, and water afterwards.

Water the beds of fruiting plants frequently, in dry weather, towards the latter end of the month, when they begin to advance for bloom; for if they be not supplied with that article, the fruit will be smaller, and of less abundant production.

DISBUDDING, OR RUBBING OFF THE USELESS BUDS OF WALL-TREES.

About the latter end of this month, begin to look over apricot, peach, and nectarine trees; rub off the new advancing ill-placed fore-right shoot-buds, and other irregular growths, and all the young shoots which are useless; that is, all the shoots which are produced directly fore-right, on the front of the branches should be rubbed closely off, as well as those which arise in parts of the tree where they are evidently not wanted, and are situated in places where they cannot be regularly trained to the wall.

But it must be observed, that all regularly placed side-shoots and leaders, and such others, which are properly situated for laying in, must be left; and, when of a proper length, should, in the two succeeding months, be trained to the wall in a regular manner.

DISBUDDING VINES ON THE WALLS.

The vines against the walls should be looked over about the end of this month; they will, by that time, if a forward season, be advancing in shoots, and some of them showing fruit. The dressing or disbudding at this early season is to be performed with the finger and thumb, rubbing the shoots closely off.

Previously to the training of any tree, for the purpose of obtaining the greatest quantity of fruit, its mode of bearing should be first taken into consideration, and the object of the cultivator must necessarily be to obtain the greatest quantity of bearing wood, of an equal and proper distribution.

The vine is a creeping plant, throwing out the most luxuriant shoots at the extremity of its branches, where they are laid horizontally or perpendicularly. In training this tree, it is necessary to keep three principal objects in view: first, to cover the space allotted to it with fruit-branches, leaving room for both ripening the fruit, and the branches that are to bear fruit the succeeding year: secondly, to take off the top of each branch bearing fruit at the second or third joint above the uppermost bunch, except such branches as are destined to bear fruit the next year, which latter must be exposed, and by no means topped; for if the sap be checked in these, many of their buds will burst the same season, and the fruit of next year be destroyed: thirdly, to take off all laterals as they arise, and any shoots which, though laid in for fruit, turn out unproductive, that the whole strength of the tree may be properly applied to the maturation of the fruit, and the wood for succeeding crops.

By early regulating the vines, the grapes will advance freely in their growth, become larger, more regular, ripen sooner, and be in greater perfection, than when the vines are suffered to run into confusion; besides, the work can be performed much sooner, and with much greater correctness, regularity, and beneficial effect, both to the vines and prosperity of the fruit.

GRAFTING TREES.

Grafting may yet be performed, if required.

The sorts which will yet succeed, are some of the late kinds of apples, pears, and plums; but they must be grafted the beginning of the month; for they will not succeed well, if done later.

NEWLY GRAFTED TREES.

Newly-grafted trees should now be often looked over, to see if the clay keep close about the grafts; it being apt to crack, and sometimes fall off. When this is found to be defective, let the old clay be taken off, and add some new in its stead.

All those shoots, which rise below the graft, must be taken off as they are produced: these, if permitted to remain, would rob the graft of nourishment, and prevent it shooting freely.

NEWLY BUDDED TREES.

Look also over newly budded trees, that is, those that were budded last summer; they will now begin to advance in their first shoots, proceeding immediately from the inoculated bud, which, having remained dormant from its insertion in the stock last summer till this season, will each push forth one strong shoot, to form the beginning of the future new tree. Examine, therefore, the young shoots, and look with a careful eye for insects, which sometimes attack them, if very dry weather. If the leaves curl up, insects are the cause of it; and, if not prevented, will spoil the shoots in their first growth. Let the curling leaves be carefully picked off; it will prevent the mischief spreading farther; and fumigate with tobacco-smoke, or wash the tips of the shoots with tobacco-liquor, soap, and sulphur, as advised for peach-trees, &c.

M A Y.

THINNING WALL-FRUITS.

The thinning of fruits, when they set too thickly on the trees, is a very important branch of fruit-tree culture, and it cannot be denied, that it is by many too little attended to. That all sorts of fruits would be benefited by being properly thinned is evident; even the most common gooseberry and strawberry would be increased, both in size and flavor, how much more so, then, peaches, nectarines, grapes, and apricots; and, although seldom practised, plums, cherries, and apples, would be improved by the process. In favorable seasons, peaches, nectarines, and apricots, set in clusters upon the trees, and, if not removed, would push one another off; but this natural effort would much exhaust the trees; it is better, therefore, to commence the operation of thinning soon after these fruits are set, and it should be performed with a pair of sharp-pointed scissars, thinning out those that are most crowded, and reducing each cluster of fruit, or where they are set so thick as to touch one another, to a reasonable extent. This operation, however, must not be completed at this early period, as circumstances may occur, of which we have no fore-knowledge, that may cause a great portion of the crop to drop off; reserving for future thinnings in June, and, in some cases, a final thinning in the beginning of July. As a general principle to be kept in view at each thinning, the largest and best-formed fruit, and such as are most favorably placed, should be retained; all others should be taken off, unless upon such shoots, or parts of the tree, where the crop may be less abundant. In such cases, a few of the less handsome fruit may be left, which will improve, as they advance towards perfection. On healthy and fully established trees, the crop should be left in a greater quantity; but upon sickly and newly-planted ones, and upon sickly or weak shoots, even of healthy trees, they should be thinned to a greater extent. No general rule can be laid down, as to the distance that each fruit should be allowed to stand from each other; a variety of circumstances are always to be taken into consideration, such as the kind of fruit, the size which it attains, the health and state of the tree, &c.; but it is always better to thin well, as the ultimate bulk of fruit will not be decreased, gaining individually what is lost in number, and the flavor will, consequently, be improved.

DISBUDDING WALL-TREES.

By disbudding is meant a species of pruning, which is performed upon fruit-trees with good effect, and if judiciously performed, will, in a great degree, obviate the necessity of much winter-pruning; while, at the same time, it disburdens the trees of all superfluous shoots and leaves, and admits of a greater share of nourishment being afforded, both to the fruit, and also to the shoots which are laid in, for the purpose of forming the tree, and producing future crops. In performing this operation, some discrimination is necessary, so that no fruit-buds be displaced, and that a sufficient number of wood-buds be retained, and those placed in a proper position. All superabundant buds are to be rubbed off with the thumb, when they have attained the length of one or two inches, by which time a proper selection can be made. In regard to apples, pears, plums, and cherries, which produce their fruit upon spurs, these should not be disbudded until the young shoots have completed two or three joints, at which time they will be readily distinguished from the spurs, which only form a knot furnished with a few leaves, and show no disposition to form a shoot. Peaches may be operated upon sooner than most other trees, as they, for the most part, produce their fruit upon the young shoots of last year's growth, and seldom, under good management, upon spurs. In proceeding in this operation, every part of the tree should be regularly gone over, and all fore-right wood displaced, leaving upon each shoot of last year's growth the uppermost, undermost, and one or two at regular distances between them, according to the length of the shoot, the strength of the tree, and other circumstances. Young trees, while in a state of training, should have their leading shoots carefully disbudded, as, at this period of their growth, a judicious arrangement of their shoots will tend to the formation of both elegant and healthy trees, this being the time when they can be modelled to whatever mode of training the cultivator may choose to adopt.

Upon this subject, Nicol justly observes, apples and pears, trained in the fan manner, may be treated very much as above; always observing to leave more shoots than may ultimately be necessary to lay in, for fear of accidents; that is, of trees in training. Trees that have filled the spaces, and are in full bearing state, may be disbudded of most wood-buds that appear, except in places too thin, or the leading shoots of inferior branches. Wood-buds on the old spurs are always to be displaced, as only tending to enlarge them unnecessarily.

Apple and pear-trees trained horizontally, must be treated in a different manner from the above. The leading stem of trees yet in training, is the object of most particular care. The buds on the last year's shoot, shortened as directed in January, must all be retained for fear of accidents, except those placed fore-right, till they have sprung a few inches, and it be seen whether enough will spring, for laying in right and left, of which to form the tree. Generally speaking, on the last year's shoot of the leading stem, the uppermost bud, the uppermost pair, the undermost pair, and two intervening pairs of buds, should be retained, if the stem push so many; otherwise, one intervening pair. All wood-buds on the horizontal branches of trees thus trained, except the leading one, should be displaced.

GENERAL CARE OF WALL-TREES.

Wall-trees will now require great attention, both as regards protecting them from cold cutting winds, and removing the protections of every sort, as soon as the state of the weather will admit of it. It is at this time, that they are injured by being protected at all, by allowing the branches, or other covering, to remain longer on them than is really necessary, which draws up the young shoots in a weak and tender state, and unfits them to stand the full exposure to the atmospheric air, and sunshine. Coverings, of whatever kind, should not be taken off all at once; they should be removed by degrees, and the young shoots hardened progressively to the full exposure of the air. Insects of all sorts will now be in full strength, and care must be taken to keep them down, which, if taken in time, will save much trouble and expense. Pick off all curled and deformed leaves of the trees as they appear, and in so doing, take care not to injure the young shoots. Supply all fruit-trees plentifully with water, if the season be dry, and use the garden-engine over all the walls every afternoon, or every alternate one, with sufficient force to dislodge the insects, and wash off all dust and filth that may have gathered on the leaves. If there be appearance of frost, prefer the morning, before the sun acts fully on the trees; and after frosty nights, which we often have about the beginning of this month, use the engine before sun-rise, that is, before the rays of heat strike fully upon the trees, on eastern and southern aspects, for the purpose of removing the effects of frost. Continue to supply all newly-planted fruit-bushes with water at their roots, and occasionally over their branches.

SUMMER-PRUNING CURRANTS, GOOSEBERRIES, AND RASPBERRIES.

On this subject, Nicol observes, it is not a very common practice to summer-prune currants and gooseberries, but it is essential to their welfare, and to their production of fine fruit, if judiciously performed. It also, in a great measure, tends to prevent the ravages of the caterpillar. No doubt a moderate degree of shade is conducive to the swelling of the fruit to a full size; but if, by too much shade, it be excluded from the sun and air, it will be wanting in flavor; therefore the hearts of the plants should be regularly thinned of the cross and water shoots; and all suckers rising about the roots ought to be carefully twisted off, as they appear. If part of the shoots that rise about the stools of raspberries were twisted off, or otherwise destroyed, at this time also, it would let in the air about them; the shoots left for bearing next year would become stronger, and the fruit now upon the plants increase in size.

NEWLY-GRAFTED AND BUDDED TREES.

About the latter end of this month, look over all grafted trees, and let the clay be taken off, and at the same time, let the bandages be loosened.

All the shoots that rise from the stocks below the grafts, must be immediately rubbed off, that the grafts may not be robbed of their nourishment.

Let the same rule be observed with trees budded last summer, keeping the stock clear of all shoots, which would draw away great part of the nourishment from the bud.

WATERING STRAWBERRIES.

Strawberries should now be regularly and abundantly supplied with water twice or thrice a-week, if dry weather, and continued until the fruit begins to change color, when it should be left off, unless in extremely dry seasons, when it may be necessary to continue it, not only to swell off the fruit, but also to keep the plants alive; for although strawberries, in their natural habitats, receive, or seem to require little water, yet those which have been fed, as it were, upon that element hitherto, will miss the want of it, if suddenly deprived of it. The London and Edinburgh market-gardeners, who are and ought to be the best managers of these matters, give very abundant supplies of water to their strawberries, and incur a very considerable expense in the performance; but they find, that they are eventually paid by abundant crops, which, without that nourishment, would have been scanty and precarious. As the fruit begins to ripen, it should, if the weather be not very scorching, be discontinued, otherwise the flavor of the fruit will be injured. If they be planted in lines, or in such a manner, as the fruit is liable to be spoiled by the mould being splashed over them, either by watering or heavy rains; they should be protected by laying long clean wheaten straw carefully along the sides of the rows; or, which is better, common bricks, which, while the fruit lies clean upon them, their ripening is considerably accelerated by the reflection of heat from the bricks, and the bricks, as well as the straw, will prevent the drought from injuring the roots. In wet seasons, we have found great benefit in laying rods, or pea-stakes, along the sides of the rows for the fruit to lie upon, which keeps them clean, and allows a free circulation to pass under them, which will prevent their rotting, and elevate them above the attacks of slugs, which prey very much upon them in such seasons. About the end of this month, let all the runners be cut off, unless where wanted for plants for young plantations. Keep the ground clear of weeds by frequent hoeing and raking.

Strawberries cultivated, as already described, either in a separate strawberry-garden, or on the sides of banks, should be supplied plentifully with water, by either of the modes already laid down. If in beds with trenches between them, the trenches should be kept pretty full of water, by either turning in a natural stream, or pumping a quantity once or twice a-day, as they may require.

Mulching, which is covering the ground between the rows with straw or litter, or by placing slates, tiles, or bricks, so as to cover the surface of the ground between the rows, evaporation will be considerably diminished, and less water will, consequently, be required to keep the roots moist, while by adopting either of these materials the fruit will lie dry and clean. Coal ashes are not unfrequently used for this purpose, which to a certain degree are beneficial, particularly in cold strong clayey soils; but on light sandy soils, their tendency to render the soil still lighter, may be attended with injurious effects. Where the soil is not already over rich, a top-dressing of rotten dung laid between the rows will be of use, both for lessening the process of evaporation, as well as affording nourishment to the crop.

JUNE.

NEWLY PLANTED TREES.

Examine all fruit-trees that were planted last autumn, winter, and spring; in particular standard-trees; and see that they be well secured, so that they cannot be rocked about by the wind.

This should be duly attended to, but particularly such standard-trees which have tall stems and large heads; for it must evidently appear, that those trees which are secured will make stronger shoots than those that are not; likewise take care to keep the earth well closed about the bottom of their stems, that the sun or wind may not have access that way, to dry the earth near the roots.

Attend to the young wall and espalier-trees, which were headed down in the spring; they will have made some strong shoots, and the said shoots should now be nailed to the wall, both to train them in regular order, and to secure them from the power of the wind.

Water must still be given in very dry weather, to newly-planted trees, in particular to those which were planted late in the spring.

Considerable advantage would be derived in continuing some mulchy dung on the ground over the roots, to keep out the parching heat and drying winds.

THINNING STONE-FRUITS.

All kinds of stone-fruits should now be again gone over, at least twice during this month, that a further thinning of their over-abundant crops may take place; reserving, however, the final thinning till next month (*which see*).

ESTABLISHED APPLE, PEAR, PLUM, AND CHERRY-TREES.

These trees will by this time have made strong shoots, both against walls and espaliers, and where this work was not done in May, it will be necessary carefully to look over them, and to regulate them.

They will now require great care, and must be properly cleared of all unnecessary shoots. All luxuriant, fore-right, or ill-growing shoots must be taken off close, and likewise such as are produced in parts where they cannot regularly be trained in. All that are not absolutely wanted to produce a succession of wood, or to fill up vacant spaces, must be entirely cleared away.

In managing these trees, it must be observed, that although it is not necessary to leave so large a supply of young wood as for peaches, &c., and those trees which bear their fruit on the one-year-old shoots, yet such a supply is necessary to be left every year as may come round in succession, to fill up those spaces where old useless wood may, from time to time, be pruned off.

Sometimes the branches of cherry-trees begin bearing at one and two years, those of the apple and plum at two and three, and those of the pear not till they are four and sometimes five years old. Some branches bear at three years, but it is very seldom. After the branches of these trees have once begun to bear, no further necessity exists of leaving so general a supply of young wood, for they will continue to increase in bearing for many years afterwards; for which reason, when they are well furnished with good wood, it will only be proper to leave here and there, in every tree, a few of the best shoots. This work must not be now omitted, for it is possible some may be wanted to train in, in some part of the trees, at the winter pruning. In any parts of the trees, where there appears to be an absolute want of a supply of young wood, fail not to leave a sufficient number of those shoots which grow well and fit for training.

It is always the surest method to leave, in a moderate way, a sufficiency of young wood where it is apprehended it may be wanted, that there may be a choice in winter pruning, to fill up any vacancy occasioned by dead wood, &c. and it will be easy to clear away that which is not then wanted. At the principal pruning time, it is always a good maxim to leave plenty of young wood to choose from, and the branches which are left should now be fastened to the walls, pales, or espaliers, regularly, each shoot at its full length without shortening.

APRICOT AND PEACH-TREES, &c.

If the apricot, peach, and nectarine-trees were not looked over last month, in the young shoots of the year, to give the requisite regulation of summer pruning and training, it must now be done.

This work should be commenced in the beginning of the month, and followed with the utmost diligence till the whole be completed; for were these trees suffered to remain long in the wild confused manner, that they naturally grow into at this season, it would not only prove detrimental, in a great degree, to the trees, but would also very much retard the growth and ripening of their fruit.

Therefore let these trees be gone over, taking care to clear away all ill-grown and ill-placed shoots; for this will not only strengthen, but make more room to train the useful shoots in a proper manner to the wall.

In doing this, select a plentiful supply of all the best growing well-placed shoots, to retain in all parts where they can be trained in regularly; prune out all the irregular placed foreright shoots, and others not eligibly situated for regular training, as well as all rank luxuriants of remarkably vigorous growth: cut out, also, any ill-formed, thick, spongy, and other improper and apparently useless wood, and where the general shoots are over-abundant, cut away the worst of the superfluous, in a regular manner, so as to leave plenty of the best in all parts of the tree; and let all the others, as above, be pruned quite close to the places whence they originate.

At this season, it will be proper to observe, that where there are any vacant spaces, it is now a most eligible time to begin to furnish the requisite supply of wood in such parts, the same year, by pinching or pruning short some contiguous young shoots.

For example, if two, three, or more branches may be wanted to fill the vacancy, and suppose there be only a young shoot produced in or near that place, it will, in such case, be proper, in the first or second week of the month, to shorten the said shoot or shoots, to three, four, or five eyes, according to their strength: and by this practice each shoot will send forth two, three, or perhaps four lateral shoots the same season, to fill the vacancy.

The above method of shortening the young shoots of the same season, may likewise be practised on young trees, to procure a supply of branches to form the head of a proper expansion as soon as possible.

STRAWBERRIES.

The strawberry-beds must be duly supplied, in dry weather, with water, as the plants will now be in blossom, and the fruit setting and advancing in growth.

The waterings should, in a very dry time, be repeated every two or three days, from the beginning till about the middle of the month; for about that time, the principal crop of most kinds of strawberries will be about setting and swelling to their respective sizes: and while the fruits are taking their growth, the plants should be encouraged, by keeping the earth in the beds always moist in a middling degree, and the advantage will plainly appear in the size, as well as the quality of the fruit.

DESTROYING INSECTS.

Continue assiduously to destroy every species of insect on their first appearance, particularly the red spider and green fly, which, if dry weather take place, will be in great abundance; the garden-engine and fumigation will, as already noticed, keep both under.

BUDDING.

This operation may be commenced on some trees this month, and continued until August. (*See next month.*)

VINES.

Vines on the walls should be attended to, and regularly pruned, and their shoots laid in, according to circumstances. Few insects injure the vine on the open wall. The red spider is its greatest enemy, but it may always be kept under by a plentiful supply of water, administered with the engine. The thrips sometimes attack them on the walls, but most generally on those leaves or shoots, which have been injured by frost. Fumigation will rid the vine of this enemy, as well as of the fly. Some of the turtle insect sometimes visit the vine, but we have never observed them commit any other injury, than causing a mucilaginous substance to fall on the leaves, which, in a certain degree, is injurious to them. They are to be destroyed by being rubbed off, which, on account of their size, is no difficult matter. The species of this genus, which visit the vine, are the *Coccus hesperidum* and *Coccus ciadonidum.*

PRESERVING FRUITS FROM BIRDS.

Cherries on wall, and standard trees should be protected from birds, by means of nets. They should be put on walls, as recommended for screening the blossoms, that is, so far as regards setting them out properly with sticks from the wall. Standard-trees may be secured by covering the top of the tree with a large net, and securing it at the bottom.

Cherries are sometimes cultivated in an inclosure by themselves on dwarf-standards, and in this way they are easily preserved from the attacks of birds, by securing them by means of nets. In some parts of the Netherlands, regular cherry-gardens are formed, and are secured from birds by similar means. In some parts of England, cherry-grounds are enclosed with high wire fences, sufficiently fine to prevent the birds from getting in, and secured over the top by means of large nets, which are supported sufficiently high to allow the trees to attain their desired height; underneath these trees, which are regularly trained dwarf-standards, strawberries, currants, and gooseberries, are planted, which, being protected from birds, remain long on the plants, after all the fruits of the same sorts are over in the garden, with the exception of those which are matted on north walls.

Strawberries should now be protected from birds by means of nets. If planted in the common way, in open quarters of the garden, they may be preserved from them by spreading nets over the beds, and supporting them from the ground by small sticks, about a foot or eighteen inches high; these to be taken off and replaced after each gathering. This is attended with some trouble, but it often happens that small birds and wood-pigeons will destroy the crop, unless some such means be taken for their preservation.

In damp weather, look over the strawberry-beds, and pick up the slugs, which will be otherwise very destructive to them. Net up such raspberries, currants, and gooseberries, as are planted on south walls for early crops, for they are more likely to be destroyed by birds than they otherwise would be, if plenty of ripe fruit were in other parts of the garden; without this precaution, a great disappointment may arise, in having those fruits fit for the table at an earlier season, than that at which the principal crops come in.

SUMMER PRUNING SMALL FRUITS.

The summer pruning of gooseberries, currants, and raspberries, has been hitherto little attended to, although it has been found highly useful. At this season, all young wood, that would otherwise be left on the bushes until winter, and then pruned off, should be displaced; if done in May, or the beginning of this month, it will benefit the plants, as well as the fruit; the nourishment, which it would require to support them, will then be thrown into the useful shoots and fruit. A free admission will also be obtained for the sun and air to improve the fruit, and when ripe will be gathered with greater comfort, particularly the gooseberries. The trees on walls, or trained on espaliers, should also be examined, and thinned of all useless wood; and such as is really useful trained into the wall, or rail. The bushes, on the appearance of the *Phalænæ grossularia,* the *Aphis ribes,* and the caterpillars of the Papilio genus, should be well scourged with the garden-engine, in which lime-water or water alone may be used. But no method is so effectual, as picking them off with the hand, as already recommended.

WATERING WALL-TREES.

Continue to operate with the garden-engine on all kinds of fruit wall-trees, except such as are advancing to maturity, and apply the water with force for the destruction of insects, and for refreshing the trees: this operation should now be always performed in the evening, that the effects of the water may act for a longer time upon the trees.

The expense of this operation in most gardens, where water has not been laid on, as recommended in the early part of this work, and practised by Hay and other eminent garden architects, deters many from this useful branch of fruit-tree culture; and others neglect it, thinking that what the trees receive from rains and dews should be considered as sufficient. Let those persons, however, for a moment reflect, that a tree planted against a wall and constrained to it often in the most unnatural position, deprived of the perpendicular dews and rains by projecting copings, and exposed to a powerful sun, the rays of which are reflected from the wall, so as considerably to increase the temperature above that of a tree growing as a standard, must require to be supplied with water artificially, with as much reason, and on the same principle, as those plants which are reared under glass.

J U L Y.

BUDDING.

Almost all the more valuable kinds of fruit-trees are increased in this way, as well as many shrubs and plants.

This is one of the methods by which the different approved varieties of many kinds of fruit and other trees can, with certainty, be continued and multiplied; for, though their seeds readily grow and become trees, yet from the seeds or kernels of the finest varieties of fruit, not one tree out of a hundred produces any like the original, and but very few that are good; so variable are seedling fruit-trees, and many others; but the trees or stocks so raised, being budded or grafted with the proper sorts, the buds or grafts produce invariably the same kind of tree, fruit, flowers, &c.

This mode of propagation is particularly useful for peaches, nectarines, apricots, plums, and cherries; the three former of which succeed better by budding than grafting, and are usually worked upon plum-stocks raised from seed, and sometimes by suckers, layers, and cuttings. They are also often budded upon their own stocks, or such as have been raised from the kernels of these kinds of fruit; but they are commonly more strong and durable when budded upon plum-stocks.

There are also other sorts, as plums and cherries, which are often propagated by budding as well as grafting: the cherry is, however, generally the most prosperous by the latter method, as being more apt to gum and go off by budding. These sorts, being of the same genus, grow well upon stocks of each other, but best upon their own stocks.

Apples and pears are, likewise, capable of being propagated by budding as well as by grafting; though, as they grow freely by grafting, which is the most easy and expeditious mode, they are commonly propagated in that way.

In short, most kinds of fruit-trees, and others, propagated by grafting, also succeed by budding. Grafting is, however, more adapted to some sorts, and budding to others.

The operation of budding, in all sorts, is mostly performed on young trees raised from seed, suckers, layers, &c. which are termed stocks, and which, when about half an inch thick in the bottom of the stem, are of a proper size for budding on, although it may be performed upon stocks much smaller. It is also practised on trees that already bear fruit, when intended to change the sorts, or to have different sorts on the same tree, or to renew any particular branches of a tree; performing the operation on young shoots of the year's, or of one or more year's growth. This is the most suitable time for beginning this operation, although, in some cases, it may be done successfully sooner; but from the middle of this month till the end of August is the most general season. When buds are put in too early, they are apt to spring the same season, and not having time to harden or ripen, are often destroyed in winter. The buds should always have finished their spring growth, and come off readily in the operation. The buds should be taken from the young shoots of the same summer's growth, and, like grafts, should be cut from the most healthy trees intended to be propagated. A number of the best and moderately strong shoots should be cut each day, as they are wanted, and as they are collected, all the leaves should be cut off, with about a quarter of an inch of their foot-stalks only left, trimming off also the spongy soft ends of the shoots; they should then be covered from the air and sun, and taken as wanted; and as each cutting furnishes many buds, they should be cut into pieces about an inch and a half long, as they are inserted into the stocks. Those buds in the middle part of the cuttings are preferable to those towards the ends.

It is the common practice to insert one bud only in each stock; but some place two, one on each side, opposite each other.

The proper height at which to bud the stocks varies according to circumstances. For dwarf-trees intended for walls and espaliers, &c. they should be budded from within about three to six inches of the bottom, that they may at first furnish branches near the ground. For half-standards, at the height of three or four feet; and for full-standards, at from five to six or seven feet height; the stocks being trained accordingly. For half and full-standards, the budding may, however, if necessary, be performed as low in the stock as for dwarfs, and the first shoot from the bud trained up to a proper height for a stem.

The proper apparatus for budding are, a small knife with a flat thin handle, for preparing the stock and buds for insertion, and opening the bark of the stock, to admit them, and a number of new bass strings to tie them, which should be previously well soaked in water to render them more tough.

As in this operation, the head of the stock is not cut off, as in grafting, but left entire till the ensuing spring, and then cut off, a smooth part on the side of the stock, at the proper height, rather on the northward side, away from the sun, should be chosen for the insertion of the buds. This should be done by making a horizontal cut across the rind of the stock, and from the middle of that a slit downwards about two inches in length, so that it may have the form of the letter T, being careful not to cut too deep, lest the stock should be wounded; then having cut off the leaf from the bud, leaving the foot-stalks remaining, a cross cut should be made about half an inch below the eye, and the bud slit off, with part of the wood to it, somewhat in the form of an escutcheon: after this, that part of the wood which was taken with the bud should be separated, taking care that the eye of the bud be left; all those buds which lose their eyes in stripping, are useless; then gently raise the bark of the stock, where the cross incision was made, with the flat handle of the knife clear to the wood, and thrust the bud into it; placing it smooth between the rind and the wood of the stock, cutting off any part of the rind of the bud, which may be too long for the slit made in the stock; and having thus exactly fitted the bud to the stock, tie them closely round with bass mat, beginning at the under part of the slit, and proceed to the top, being careful not to bind round the eye of the bud, which must be left open and free.

Although it be the ordinary practice to divest the bud of that part of the wood which was taken from the shoot with it, yet in many sorts of tender trees, it is better to preserve a little wood to the bud, without which they often miscarry. This has occasioned some to imagine that some sorts of trees are not capable of being propagated by budding.

After the buds have been inserted three weeks or a month, they should be examined, to see which of them have taken; those which appear shrivelled and black, being dead, but those which remain fresh and plump have joined. At this time, the bandage should be loosened, which, if not done in time, is apt to pinch the stock, and greatly injure, if not destroy the bud.

In the following March, cut off the stock about three inches above the bud, in a sloping manner, that the wet may pass off, and not enter the stock; the shoot which proceeds from the bud, which would otherwise be in danger of being blown out, may be tied the first year to the part of the stock left above the bud; after which it should be cut off close above the bud, that the stock may be covered by it. Some, however, think it a better practice to cut it close at once.

After this, the whole effort of the stock is directed to the inserted buds; they soon push forth strong, one shoot from each; many shoots also arise from the stock; but these should be constantly rubbed off as often as they appear, that all the powers of the stock may be collected for the vigor of the bud-shoot, from which now commences the tree, and by the end of summer is, in some sorts, advanced three or four feet high; and in the autumn or spring following, the young trees may be transplanted into the places where they are to remain, or they may be kept longer in the nursery, according to the purposes for which they are designed.

Shield-budding reversed, differs from the former, in having the transverse cut made at the bottom of the perpendicular slit, instead of its top, and of course the shield is reversed in its position. This mode is sometimes practised, and is preferred to the other by those who contend that the sap rises in the bark equally with the wood; but as this opinion is on the decline, shield-budding is not much used. It is sometimes practised in the orange-nurseries, near Genoa, as may be seen by orange-trees imported from that country.

Scallop-budding, is performed on trees having a thick hard bark, and is also sometimes done when the bark and wood do not readily separate. It is performed by taking a thin tongue-shaped section of bark from the side of the stock, and in taking a similar section from the shoot of buds, but in neither case removing the wood. The section or shield, containing the bud, is then laid on the corresponding scallop in the stock; its upper edge exactly fitted as in shield-budding, and at least one of its edges as in whip-grafting. After this, it is tied in the usual way. This sort of budding may be performed in spring, or at any season. The French gardeners often bud their roses in this manner in spring, and if they fail, they have a second chance in July by using common shield-budding. Its disadvantages are, that it takes longer time to perform the operation, and is less certain of success.

The late professor Thouin enumerates no less than twenty-three species and varieties of budding, but of these, none are in practice in this country but the three already described; and of these, the first, or common shield-budding, is the most common in use. Budded trees are generally two years longer in producing their fruit, than grafted ones; but the advantages of budding is, that where a tree is rare, a new plant can be got from every eye, whereas, by grafting, it can only be got from three or four eyes. When grafting has been omitted in spring, then budding comes in, as an auxiliary, in summer. Mr. Knight has transferred blossom-buds from one tree to the barren shoots of another with success. However, he does not consider this to be of much utility, but merely a curious experiment.

GRAFTING FRUIT-TREES.

A variety of saddle-grafting is practised in many parts of Herefordshire, and is not done till this month, or the latter end of the former. It is practised on small stocks, at the time the bark is most readily detached from the alburnum. The head of the stock is taken off by a single stroke of the knife obliquely, so that the incision commences about a diameter of the stock below the point, where the *medulla* appears in the section of the stock, and ends as much above it on the opposite side. The scion, which for this mode of grafting should not exceed in diameter half that of the stock, is then to be divided longitudinally about two inches upwards from its lower end, into two unequal divisions, by passing the knife upwards, just in contact with one side of the medulla. The stronger division of the scion is then pared thin at its lower extremity, and introduced, as in crown-grafting, between the bark and the wood of the stock, and the more slender division is fitted to the stock upon the opposite side. The scion, by this means, stands astride of the stock, to which it attaches itself in a very complete manner, and covers the top of the stock in one season. Apples and pears grafted by this method seldom fail, and may be practised with equal success with young wood of this year's growth, as soon as it becomes moderately firm and hard.

VINES.

Vines should be now looked over again, in order to clear them from such shoots as have been produced since last month. In vines, many small shoots generally rise, one mostly from every eye of the same summer's shoots which were laid in a month or two ago; and the same small shoots must now, as they are produced, be all displaced, to admit all possible benefit of the sun and free air to the advancing fruit.

All other shoots, wherever placed, that have been lately produced, must also now be rubbed off close; and such shoots as shall rise any time this month, should, accordingly as they come out, be continually taken off, except where good sizeable shoots advance in or near any vacant parts where a supply of young wood appears necessary; in which case, it is proper to retain them, and have them trained in regularly.

WALL-TREES.

Where wall-trees have not yet had their summer pruning, that very needful work should be done in the beginning of the month; otherwise, the fruit upon such trees will not only be small and ill-grown, but be greatly retarded in attaining maturity, and will be also of very inferior flavor. Independently of retarding the growth and spoiling the taste of the fruit, it is also detrimental, in a very great degree, to wall and espalier trees, to neglect the summer pruning and the entire nailing till this time; particularly to apricots, peaches, nectarines, and such trees as produce their fruit principally upon the one year old shoots. It also causes great perplexity to the pruner, to break through and regulate such a thicket and confusion of wood, requires treble the pains and labour, and cannot be executed with such accuracy, as when the work is commenced early in the summer.

There is a very great advantage in beginning early in the summer to train the shoots in a proper direction; and, at the same time, to clear the trees from all ill-placed, luxuriant, and superfluous shoots; for when the useless wood is timely cleared out, and the useful shoots laid in closely and regularly to the wall, the sun, air, and gentle showers, will, during the whole time, have proper access, not only to promote the growth and improve the flavor of the fruit, but also to harden or ripen the shoots properly, which is absolutely necessary to their producing good fruit and proper wood next year.

Do not shorten any of the shoots at this time, but let every one be laid in at its full length, where room admits. Look also again over such wall and espalier trees as were pruned and nailed the last two months; and see if all the shoots then laid in, keep firm in their places; and where there are any that have been displaced, are loose, or project much from the wall, let them be now nailed in again close in their proper position.

Likewise observe if there have been any straggling shoots produced since last month, in places where not wanted, and let them now be displaced.

FINAL THINNING OF WALL-FRUITS.

The stoning of peaches, nectarines, apricots, and plums, will now be over, and all danger of their casting their fruit at that precarious season be past. They should now be thinned out nearly to their respective distances, leaving, however, a few more than enough to be picked off occasionally, till towards the end of this month or the beginning of next, for fear of accidents. Sometimes many will drop off between their stoning, and their taking their first swelling, as it is called; but all thinning should be completed before they take their last swelling, for if delayed longer, it will be too late. With respect to the quantity or number proper to be left on a tree, much must depend on its size and strength, and whether it be an established tree, or still in training. All healthy trees are to be allowed to carry a greater quantity than those in a debilitated state; young trees still training, unless very gross indeed, should also be well thinned of fruit, else their progress in filling their allotted share of the wall or pales will be prevented. Very luxuriant trees, however, may be allowed to carry a larger crop to correct their gross habits; and this, if judiciously done, will bring them into better wood than any system of pruning that can be adopted. On the larger sorts of peaches, apricots, &c., in a healthy full-bearing state, one fruit for every square foot of surface may be taken as a good medium. That is to say, that a tree occupying a space equal to one hundred square feet should be allowed to ripen one hundred fruit; the smaller sorts may be allowed to ripen one-third more, according to their size and the health of the trees. Plums should be thinned to a reasonable extent, and not be allowed to touch each other if on spurs; and if on young wood, and of the larger sorts, to be full six inches apart. Few gardeners have resolution to thin sufficiently, all being ambitious of large crops; but by thinning, that which is lost in number is more than made up for in weight and quality. It is a just observation of a very intelligent gardener, that "every one ought to thin his friend's trees." The effects of thinning can, like most other operations in gardening, only be discovered by comparison. Let, therefore, one tree be thinned as above, and another only half as much, and it will be found, that the tree fully thinned will produce a greater weight of fruit, and be incomparably more beautiful and higher in flavor. Apples and pears, particularly the finer sorts, should be thinned, and the result will be obvious. They should be thinned when about half grown, at a time when all chance of their dropping off is over. It is not going too far, to say that all small fruits, gooseberries, currants, raspberries, and even strawberries, should be thinned. These should be thinned with sharp-pointed scissars, such as are used for thinning grapes. The best cultivators of these fruits thin them very much. Nothing tends more to keep fruit-trees in good health than a regularity in their crops, and this should always be done some time before they swell off for ripening; for if delayed till they be nearly full grown, the mischief is in a great measure done, both to the tree and to the fruit that is left.

WATERING WALL-TREES.

This important business should be persevered in, to all trees, excepting those which are ripening their fruit; from these it must be withheld until the fruit be gathered, when one or two good waterings with the engine should be given.

DESTROYING INSECTS ON FRUIT-TREES.

Continue assiduously the destruction of insects of all sorts that infest the fruit-garden. Wasps will now be getting strong, if care have not been taken to destroy them as they appear. The most effectual method to destroy them is to find out their nests, and at night introduce a squib made of gunpowder, which will stupify them; or brimstone-smoke introduced will have the same effect, but it is not so readily forced into the remote parts of their subterraneous habitations, as that of gunpowder. For the more effectually carrying this work into execution, give rewards to boys, and the operatives of the garden, for each nest destroyed within a mile of the garden, and let each nest so destroyed be brought to the gardener, or whom he may appoint, to see that it is done in a proper manner. Boys will discover the nests in the day-time, and at night, when all the enemy are encamped, fire the train, and their destruction follows in a few seconds, not one of them escaping. When the squib is fairly introduced, put the foot, or a piece of turf, on the hole, to prevent the escape of the smoke, which after having been a few minutes in the hole, dig up the nest with a spade, and pour plenty of water upon the whole, which work up into a complete mortar, with the spade; or else gather up the whole, and carry it to the garden for examination. A diligent attention to this practice will, in a couple of seasons, clear a distance of two miles round the garden entirely from these destructive creatures. Phials half filled with any sweet liquid, hung up in the trees amongst the fruit, will destroy many, whilst a number may be destroyed during the time they are buried in the fruit, which they excavate quite hollow, and are so intent upon the fruit, that they will scarcely come out of it. They are most voracious, and will devour a vast quantity of fruit daily. The pieces of meat which they have been observed to carry off from a butcher's stall is truly astonishing. They are furnished with a natural saw-like proboscis, which they are very expert in using to cut off such pieces of fruit or meat as they choose. Oil is fatal to all insects when dropped upon their backs; it closes up the pores by which they breathe: this may be readily applied to them while half buried in the fruit.

The *Ear-wig* (*Forficula*) and *Wood-louse* (*Oniscus*) will now prey upon the ripe fruits, and should be destroyed by placing bean-stalks (which contain a sweetness within, of which they are supposed to be fond) or other hollow substitutes for them to retreat into during the day, as both, for the most part, commit their depredations in the silence of night; and if these be examined every morning, and the insects they contain blown out, they may be readily destroyed.

Slugs will also now ascend the walls in cloudy weather, and secrete themselves behind the larger branches, and in the holes of the wall, and will commit sad havoc upon wall-fruits, particularly nectarines, even in an unripe state; they will strip them of their skin, and sometimes eat them up altogether; a strict search should be made for them every day, and no part of the wall left unexamined; a close attention for a few days will rid the trees of them, and no method so good as carefully hand-picking them.

A very infallible trap for these depredators is to make small thimble holes, about an inch in depth, near the plants attacked; into these holes the slugs are certain to retreat during the day, where they may be destroyed by sprinkling a little quick-lime into the holes. We have always found the use of barilla to be an efficacious method of killing these vermin. If a person were to go over his garden early in the morning, with a little bag of barilla, and sprinkle a little on every slug and snail, their immediate death will ensue.

AUGUST.

WALL-TREES.

Wall-trees still demand attention; particularly peaches, nectarines, and such like.

Let them be once more carefully looked over, and see whether all the branches and shoots remain secure in their proper places. Where any have been displaced by winds or other accidents, let them be nailed up again in a secure and neat manner; and where any of the shoots are loose, or project from the wall, or have extended in length, let the whole be nailed in securely.

To have the shoots all lie close and regular to the wall is a great advantage to the fruit, and is beneficial to the trees, and always looks well.

As the fruits, particularly peaches, nectarines, apricots, and the finer plums begin to color, the leaves should be picked off that overshadow them, in order to allow the full power of the sun to reach the fruit, which will both add to its flavor and color. In doing so, care must be taken not to pick them off too close, so as to injure the buds; in most cases, if they be cut off about the middle, or within an inch or two of their base, the buds will not suffer much, and many may be placed aside, and will not require to be taken off at all.

FIG-TREES.

Fig-trees will now require great care; their fruit will be full grown, and begin to ripen, and will require a moderate degree of the sun's heat to forward them, and to give them their real flavor.

All strong shoots should be laid close to the wall, but use the knife as little as possible.

Let no shoots be cut off except those which grow foreright; and such as grow in a proper position should be carefully trained, for those which are now laid in, are the shoots from which the fruit is to be expected next year. And as these trees bear no fruit except from the one year old shoots, it is best to leave a sufficiency at this time, as it will be very easy to prune such away (at the general season for pruning) as are not wanted.

Let them be laid in regularly, not one across another, and secure them properly, for, on account of the broadness of the leaves, the winds and rain have great power over them.

NEW-BUDDED TREES AND BUDDING.

Go over the stocks or trees which were budded in July, and let all the bandages be loosened.

This should generally be done in about three weeks, but never exceed a month, after the budding is performed; otherwise, as the bud will swell, the sap will be stopped in its regular course, and the parts about the bud will be pinched, and swell irregularly.

Likewise in trees budded last year, now advancing in their first shoot, examine that part of the stock below the inoculation; and where there are any shoots sent forth in that place, let them be taken off close.

Budding may still be performed, and will be successful, in most sorts of stone-fruit, as peaches, nectarines, apricots, plums, &c.; but this must be done in the beginning, and not later than the middle of this month.

CLEARING FRUIT-TREE BORDERS.

Let all fruit-tree borders be now kept clean and free from weeds of any kind whatever, and let no litter be seen on any parts thereof.

These borders, when kept clean, have not only an agreeable appearance to the eye, but have a very beneficial effect on the fruit, by reflecting the heat on the fruit, and thereby ripening and greatly improving their flavor.

GATHERING FRUITS.

Many sorts of wall and standard fruits will now be ripe, the gathering of which is an important part in the practice of gardening, and one to which sufficient attention is seldom paid. It is a common practice to allow most fruits, when ripe, to fall of their own accord; and, in order to prevent the injury they may sustain, many plans have been adopted, such as covering the borders at the bottom of the walls with moss, or suspending nets and mats for them to fall into. Fruits left upon the trees till sufficiently ripe to fall of their own accord, are much too ripe, and consequently have lost much of their flavor; besides, however good the precautionary measures may be, still many are so much bruised as to be unfit to keep many days, and often not many hours. It is, therefore, much better to watch their ripening, and carefully to gather them as they arrive at full maturity, and this is to be ascertained by a close acquaintance with their natures and sorts. There are certain criteria to be fixed upon, by which we may know, with great nicety, when certain fruits are in a proper state to gather. Most fruits part freely with the tree when ripe, particularly the plum; they should not be much handled, as the bloom is apt to be rubbed off. Apricots may be accounted ready to gather, when the side next the sun feels a little soft upon gentle pressure with the finger. They adhere firmly to the tree, and would remain upon it till over ripe and mealy. Peaches and nectarines, if moved upwards and allowed to descend with a gentle jerk, will separate from the tree, if ripe. Figs are generally ripe when the small end assumes the same color as the larger. Apples and pears begin to fall naturally, when ripe. Another and more easy mode of ascertaining the ripeness of fruit, is to move the fruit up level with the foot-stalk, if ripe, it will readily part from the tree. Another criterion is to cut up a fruit of the average ripeness of the crop, and if its seeds have become brown, or blackish, it is ripe; but if it still remain white, it is not ripe. Much has been said of fruit-gatherers, &c., but the safest mode is to determine the fact of ripeness by some of the above-mentioned criteria. Fruits may, for some time, be retarded in their ripening on the trees; currants, and some thick-skinned gooseberries, may, by covering, be retarded till Christmas. Peaches and nectarines may, by the same means, be kept hanging on the trees for a fortnight after they are ripe. This, to a certain degree, injures their flavor, but it is often found necessary in order to suit the arrangements of the owner. Peaches, and other tender fruits, may be kept for some time, if gathered before they are fully ripe, and placed in boxes in a cold cellar or ice-house; and fruits even gathered in the morning, if placed in the ice-house, are supposed to be improved in flavor when sent to the table in the afternoon.

During the season of the finer fruits, the walls should be gone over once at least, if not twice every day, and all ripe fruit gathered carefully by hand, bruising it as little as possible, and carefully laying it in a flat level-bottomed basket, which should be carried by a second person. The bottom of the basket should be covered with some fine dry moss, *Hypnum* or *Sphagnum*, and over it a sheet or sheets of clean paper, upon which the fruit should be carefully placed in rows, and steadily carried along until the whole be gathered, or until the bottom of the basket be covered; but in no case, particularly when gathering peaches or nectarines, put more in one basket than what will cover the bottom. Carry this basket to the fruit-room, and, to prevent an unnecessary handling of the fruit, leave them in the basket until wanted for use. With another basket, or baskets, according to the quantity to be gathered, proceed again until the whole be collected. But where there are a number of trees, and the quantity of fruit great, the best only should be thus carefully collected, and another basket should be carried, into which all such as may have fallen, or be in any way injured, should be placed, and these also should be carried to the fruit-room till wanted for the kitchen, for stewing or other culinary purposes, or otherwise disposed of as may be desired. All other fruits should be collected according to this manner. Such as are much destroyed with wasps and other insects should be left on the ground, or stuck on the trees, as while they last, the insects will not attack the other fruit; they will act as baits for them at the same time, and should be looked to frequently, and as many of the insects killed as possible. Notwithstanding this care of gathering them daily, many will fall, but in order to save them as much as possible, it will be advisable to have either mats or nets suspended for them to fall into; it will save many from being dashed to pieces, or so bruised as to be unfit for use. At that season, when peaches, nectarines, apricots, and plums most abound, the supply should be given in for preserving and such like uses, in order that when the later sorts come in, the demand may not be so great for them for the dessert, as to be attended with inconvenience to the gardener to spare them. This ought to be considered of all fruits while they are in plenty, in order to avoid disappointment and unpleasant altercations.

Jargonelle, bergamots, and other pears; jennetting, summer pearmain, and other apples, which ripen in July and August, should be eaten from the tree, or within a few days after they are pulled; they should not be allowed to drop, and they lose much of their flavor by keeping. When gathered, they should be laid upon the shelves of the fruit-room, laying paper under them; but on no account lay them upon moss, hay, or brown paper, either of which will give them a bad flavor; neither should they be laid in heaps, nor too closely together, but should be laid out quite separate and distinct, so that they will not even touch each other. Free air should be admitted at all times into the fruit-room at this season, and in damp weather, a gentle fire should be kept up, in order to dry any damp that may have arisen in the room. Cherries and plums should for the most part be gathered from the trees, as should be all small fruits, and as soon before they are used as possible, as they lose their flavor by keeping.

PACKING FRUIT FOR CARRIAGE.

Fruit sent to any distance should not be packed in baskets, as it is liable to be injured by being bruised. Boxes of tin or deal should be used for this purpose, and of sizes according to the quantity to be sent. These boxes, if of wood, should be made of inch deal, and secured at the corners with iron clamps, and secured with locks, each lock having two keys, one to be kept by the person who packs the fruit, and the other by the person who unpacks it. These two keys to answer the locks of all the boxes. In packing the fruits, the heaviest and largest should be put in the bottom, and the lightest and more delicate on the top. Thus, melons, apples, and pears, should be put in the bottom, each wrapped up in a separate piece of clean paper, and packed in amongst clean well-dried moss; species of *Sphagnum* or *Hypnum* to be preferred; over them may be packed peaches, apricots, plums, and grapes, each first wrapped up in vine leaves, and over them a piece of clean paper, and laid level in, and packed tightly with moss. Strawberries, gooseberries, currants, and raspberries, should be put into shallow tin boxes, each sort separately, and packed in the larger box beneath the peaches and grapes. In packing, observe to lay the fruits in regular layers, and between each layer a course of moss; continue this till the box be full, which should be made up with moss, if there be not a sufficient quantity of fruits to fill it, to prevent any friction amongst the fruits. The lid should be then secured down with a lock, but not with nails, for the difficulty of getting them out would shake the fruits too much. The moss should always be returned in the boxes, which, if kept dry and well aired, will generally last all the season.

DESTROYING INSECTS ON FRUIT-TREES.

Continue the destruction of all insects on fruit-trees. As many fruits will now be ripening, the use of the garden-engine must be suspended. If it has been freely used, as directed hitherto, there will be no fear of the red spider, or any other of the smaller insects, doing much injury. Slugs will, in wet weather, be both numerous and destructive; they must be, as has been already directed, picked up wherever they appear; and the destruction of wasps and large black flies should be regularly attended to, both of which will make sad havoc amongst the finer fruits at this season.

COVERING UP TO RETARD SMALL FRUITS.

Red and white currants, and Morella cherries, planted on north aspects should, as they ripen, be covered up with nets to protect them from birds; and many of the currant-bushes may be covered with large garden-mats, which will preserve them till a late period. The late and thick-skinned gooseberries, red and white currants, in quarters or rows round the sides of the walks, should be examined, and such as are best loaded with fruit should be covered up with mats or nets. Where these fruits are planted in lines in the quarters of the garden, a quantity of wattled hurdles will be found extremely useful for this purpose, placing a row of them along both sides of the bushes, about two or two and a half feet distant at the bottom, and brought together at the top and tied with cords, placing each hurdle close to the other, so as to exclude birds from getting in. In such places, as it is likely that they will get in at, a few small branches of spruce, or other thick-growing trees, should be drawn in, so as to thicken them sufficiently. The ends of each row should be secured with a piece of mat. At any time that birds should get in, they can be easily killed or driven out, by opening the end mat and beginning at the other, with a small stick drive them out. This mode of preserving small fruits we have found to answer much better than any other; for if the bushes were summer pruned, as already advised, a freer circulation of air passes among the bushes, and prevents the fruit from moulding and spoiling, which it is very apt to do when covered with mats; and the expense of hurdles is much less than that of mats, and can be, if taken care of, made to last for several years, and are extremely useful for many other purposes in the garden, such as shading newly-planted crops in sunny weather, and for protecting early spring crops from the effects of frost, &c.

PLANTING STRAWBERRIES

Strawberries may now be planted. The strongest plants should be chosen, and if the roots be well puddled before planting, and a good watering given as soon as planted, they will soon strike root, and be established before the approach of winter.

SEPTEMBER.

PEACHES AND NECTARINES.

These fruits will now require particular attention, many of them will be ripe and ripening. The use of the engine should now be withheld, until the crop be all gathered. Any shoots that may have been displaced from the wall by winds or otherwise, should be neatly nailed in, and all useless and ill-placed shoots taken off. Where leaves hang over, and overshadow the fruit, they should be taken off, as directed last month, so that the fruit may derive all possible benefit from the sun, both to improve its flavor and color. As most fruits swell best when not too much exposed to the sun, this picking off of the leaves should not take place until they show symptoms of ripening; the influence of the sun for a few days will be sufficient to effect the desired object. In gathering such as are ripe, attend to the instructions given last month.

VINES.

The vines on the walls should be looked over, all useless lateral shoots pinched off, and all straggling branches nailed in closely to the wall, both to allow the sun getting in to the fruit, and also to ripen the wood for next year. Where the bunches are too much shaded, some of the leaves should be picked off, but in doing so, take great care not to overdo it; leave the whole or most part of the foot-stalk of the leaf attached to the wood, and take as few as possible away, as the vine suffers much from the loss of its leaves. Any shoots that were not shortened before, should be now done, to allow as much light as possible to the fruit and to avoid confusion. The earlier grapes on favorable situations beginning to ripen, should have the benefit of the sun as much as possible, and if the wasps or birds attack them, they should be protected from both by being put into thin crape, or gauze bags, putting one bunch only in each, and having the bags made of different sizes for that purpose. Such grapes as are not so forward, should be thinned out for good; it is of much importance that this be done in time; and also let them be well thinned to allow them room to swell, and the sun to ripen them.

APPLES, PEARS, AND OTHER TREES UPON WALLS.

These trees should be examined, and where required, all young or loose shoots carefully nailed to the wall, and, as directed for peaches and nectarines, those leaves which shade the finest fruit should be taken off, and all useless wood cleared away to prevent shade and confusion. Such of these fruits as are ripe, or ripening, should be carefully gathered when fit, choosing the middle of the day, when the sun has dried up all moisture, and carefully, without bruising them, removed to the shelves of the fruit-room, and there laid on sheets of clean printing paper. Never use for this purpose either coarse brown paper, or hay, or moss, for all communicate an unpleasant taste to the fruit. The room should be kept well aired, in fine weather by admitting a free current of air through it, and in damp weather, by having a fire occasionally in it. The fruit should be occasionally turned over, and all that show any symptoms of decay entirely removed.

FRUITS UPON ESPALIER AND STANDARD-TREES.

The espalier-trees should be regulated exactly as if they were on walls, and the standards, where it is convenient from their height to be easily got at, should be also thinned of superfluous wood and leaves, to allow the action of air and sunshine to pass freely to the fruit, as well as to disencumber the trees of all useless wood, which will take much nourishment from the fruit and more useful wood. Such of the fruits as are ripe should be carefully picked and laid by, as directed above. For further directions for storing fruits, see *next month.*

DESTROYING INSECTS UPON FRUIT-TREES.

Never lose sight of this object, even when the crop is gathered. Therefore, when a tree gets disloaded of its fruit, resume the use of the garden-engine with great force upon them, particularly apricots, peaches, and plums. The red spider will often begin to show itself again, having, from the respite gained, while the fruit was ripening and ripe, gained considerable strength. The destruction of this very formidable enemy, by destroying at this time his thousands, will prevent his millions from coming forth in spring. The slugs and wasps will now be strong; every means should be adopted to destroy them: the directions given already, if acted upon with perseverance, will subdue them.

PREPARE FOR PLANTING FRUIT-TREES.

Towards the end of this month prepare the ground where new plantations of fruit-trees are to be made. The directions already given on this head, if acted upon, will be sufficient to render any repetition here unnecessary. Many fruit-trees of the earlier sorts will have their wood sufficiently ripened, by the end of this month, to admit of their being transplanted. One advantage will be gained by early autumn planting: the roots will, if supplied with plenty of water, and puddled as already recommended, soon push out fresh fibres, and be so far established before winter, that their change will not be much observed in spring. This is a good season for removing the earlier sorts of peaches and other stone fruits; and, if carefully done, a crop may be expected of them the ensuing spring.

STRAWBERRIES.

Strawberries should now be planted; this season and spring being the best, although under favorable circumstances, they may be planted at almost any other season. They should be copiously supplied with water when planted, and the ground trenched at least two feet deep. As their roots penetrate to a great depth, the ground cannot well be made too rich for them. Such strawberries as are planted in lines in the fruit-garden should have their runners cut off, and a good quantity of rich manure dug in between the rows, and the ground left as rough as possible. Do not, however, cut off all their leaves, as has been long the practice, as it evidently injures the plants, and leaves the tender buds without any protection during the winter.

CLEARING THE BORDERS ABOUT WALL-TREES.

The fruit-tree borders should be kept neat and clean by repeated hoeing and raking. They should be cropped at this season, chiefly with light crops, such as lettuce, endive, and other salads, which will neither shade the trees, nor exhaust the borders. It is, however, often necessary to have crops of early cabbage, cauliflowers, &c. upon them for protection during winter, and for accelerating their growth in spring. These cannot do any possible injury to the trees, provided that a due proportion of well made compost be added previously to each crop that is calculated to exhaust the ground. Salads will do little injury to these borders, and none at all, if they be previously assisted with a slight compost manure.

DIGGING THE GROUND BETWEEN THE ROWS OF GOOSEBERRIES AND CURRANTS.

The borders and quarters amongst these plants may be dug as soon as convenient, after the crops are gathered; and, if ground be scarce, the intervals between the rows may be cropped with winter spinach, late turnips, or any of the brassica tribe; if cropped with any of these, unless the ground be very rich, give a moderate dunging. If there be no intention to crop this ground, then let the whole be dug, leaving the surface as rough as possible, so that it may be the more fully exposed to the action of the frosts and air.

OCTOBER.

GENERAL CARE OF WALL AND ESPALIER-TREES.

The season of pruning and training these trees is now over, for what is called the summer pruning; and towards the end of the month, that of the winter pruning will be commencing. Those trees which have been disloaded of their fruit, should now be gone over with a light birch-broom, or straight switch or cane, and all the ripe or decaying leaves brushed off. This will greatly forward the ripening of the wood, and the maturation of the blossom-buds for next year. This brushing should be cautiously performed, never brushing much at a time. The shoots from which the leaves are to be displaced should be gently stroked upwards and outwards, but never the reverse way of the buds, for fear of injuring them. Standard-trees exposed to the wind seldom require this care, but as the wind has not the same power on wall and espalier-trees, it becomes essentially necessary.

GATHERING AND STORING WINTER-FRUITS.

Most apples and pears will be fit for gathering from the first till towards the end of the month. This, however, will depend on the season being early or late, and likewise the situation. These fruits, under most circumstances, will be in general ripe by the end of this month. Apples and pears will be fully ripe for gathering when their seeds change from a white to a darker color, and they should be gathered by the hand, and not allowed to fall of their own accord, nor yet to be shaken off the tree by force. They should be picked both from walls, espaliers, and standard-trees, individually, and carefully put into baskets; this, with the convenience of proper ladders, can be as easily and nearly as soon done as if shaken down by force, and half of them spoiled. The expense of gathering them in this way will be more than defrayed by saving the fruit from bruises. When they are gathered from the tree, they should be carried into the fruit-room, and carefully arranged on the several shelves. The gathering of these fruits should be confined to the middle part of the day, when all damp is dissipated. Examine the trees several times before the operation commences, to determine that all the dew or wet is off the leaves, as well as the fruit. Where the quantity of fruit is considerable, it will be impossible to spread it all out on shelves, neither is there any necessity for so doing. All the more common and less valuable sorts, chiefly preserved for culinary purposes, may, when carefully gathered, be removed to the fruit-room, and laid up in heaps to sweat. This practice is not generally advocated in this century, but the most scientific horticulturists of the last adopted it with success, and we can see no reasonable objection to its being done to such fruits, at least, as are designed for the kitchen. By thus sweating them a little, a quantity of moisture is thereby got rid of, which is, probably, no detriment to the fruit, and must certainly contribute to its keeping.

After the fruit has remained to sweat for a few days, it should be carefully examined, and all wiped quite dry with a cloth, and laid out thinly for a few hours to dry still more effectually, then they should be packed in boxes or hampers, with clean meadow hay, free from must or bad smell, and each sort kept by itself, as they will not all keep equally well. The quantity of hay should be no more than just sufficient to prevent each layer of fruit touching each other; and when the box or hamper is full, let it be correctly labeled with the name, and time to which it is supposed to keep, and then the boxes or hampers should be packed close up to prevent confusion, the later kinds nearest the ground, and those that will be first ready for use on the top. These ought to be examined through the winter, and taken out, and any decayed ones removed, and the whole wiped clean and repacked again, observing to dry the hay, if at all damp, before using it a second time, or substituting sweet fresh hay in preference. The boxes are to be preferred to hampers, and the closer that they are made the better to exclude air, the better will the fruit keep. They should not be examined until they have been a considerable time in the boxes; this must be determined upon according to the nature of the fruit, whether it be a good keeping sort or not. For the finer kinds of apples and pears, more care should be taken of them, as their quantity will not be so great. Mr. Knight has, in one of his valuable papers, given the following as the most successful mode of keeping the finer apples and pears: "The most successful method of preserving apples and pears which," he says, "I have tried, has been placing them in glazed earthen vessels, each containing about a gallon, (called provincially steens,) and surrounding each fruit with paper: but it is probable that the chaff of oats, if free from moisture, or any offensive smell, might be used with advantage instead of paper, and with much less expense or trouble. These vessels, being perfect cylinders about a foot each in height, stand very conveniently on each other, and thus present the means of preserving a large quantity of fruit in a small room; and if the spaces between the top of one vessel and the base of another be filled with a cement, composed of two parts of the curd of skimmed milk and one of lime, by which the air will be excluded, the latter kinds of apples and pears will be preserved with little change in their appearance, and without any danger of decay, from October till February and March. A dry and cold situation, in which there is little change of temperature, is the best for the vessels; but I have found the merits of pears to be greatly increased, by their being taken from the vessels about ten days before they are wanted for use, and being kept in a warm room, for warmth at this, as at all other periods, accelerates the maturity of the pear. The same agent accelerates its decay also; and a warmer climate contributes to the superior success of the French gardeners, which probably arises only from the circumstance of their fruit being the produce of standard or espalier-trees."

The above is the rationale of Mr. Knight's practice, and exactly agrees in principle with our own, which we have adopted for several years; the only difference is, that we have kept our fruit in strong boxes filled with dry sharp sand, in which the fruit was packed and secured in a dry room, and as much excluded from the air as possible. By this means, the better keeping apples and pears will keep till April and May, and some will keep till June. However, it is probable that fruits packed in charcoal, or very dry bog-mould, may keep much longer.

PLANTING FRUIT-TREES.

If plantations of fruit-trees be intended, during the next or the succeeding months, it will be now necessary to begin preparing for that purpose; for full directions see the ***Planting of Fruit-trees,*** and ***Preparation of Soils*** for them. If it has been a good season, fruit-trees will be fit for transplanting by the end of this month, and for light soils, it is the best season in the year.

SMALL FRUITS.

Plantations of gooseberries, currants, and raspberries, where wanted, should be made towards the end of this month. They will be pretty well rooted before winter.

PRESERVING SMALL FRUITS.

The gooseberry and currants matted or netted up should occasionally, in dry days, be uncovered, and all decaying leaves picked off, and every thing removed that has a tendency to produce mouldiness, or rottenness. When they are perfectly dry, mat or net them up again, so as to exclude birds, &c.

NOVEMBER.

PRUNING FRUIT-TREES.

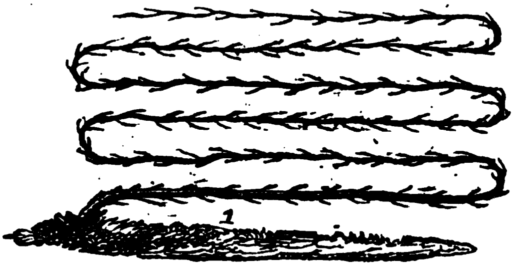
The pruning of fruit-trees of all sorts may be begun this month, excepting figs, and peaches, the wood of which is not yet sufficiently ripe. Where there is much pruning to be done, the standard fruit-trees may be first operated upon, as the majority of them will now be sufficiently ripe for that purpose; and by the time that they are finished, those on the espaliers, and afterwards the wall-trees, may be proceeded with. It is of importance, in extensive gardens, to begin winter-pruning at an early period, that there may be plenty of time to do the whole in a proper manner. In going over standard-trees at this time, if they be old, and much crowded with old spurs, they should be cut out in a regular thinning manner, and all superfluous young wood, that is not wanted to form branches to fill up any vacancy, or to replace any old worn out ones, should be cleared away, and even some of the old branches should be cut out in such a way, as to keep up a succession of young wood in every part of the tree. If this be properly attended to, the trees will remain much longer in a healthy state, than if allowed to grow on without such a provision being made for forming a supply of bearing wood. Trees much debilitated and decayed, should be headed down to within a few inches of the graft or bud, as directed in the spring months; proper ladders and pruning instruments should be used, so that the operation may be performed without injury to the trees.

PRUNING AND TRAINING VINES ON THE OPEN WALLS.

It is a general practice to prune vines on the open walls in spring, but as they are apt to bleed much, if that operation be delayed until the sap has risen, we deem it the safest way to perform it in autumn as soon as the leaves have fallen, and the wood is sufficiently ripened, or as soon after as convenient.

Vines on the open walls, in favorable situations, are no unimportant part of the produce of the fruit-garden; and, in situations where the fruit does not quite ripen in ordinary seasons, it is, in its unripe state, of some consequence to the owner, not only for the use of the kitchen, but also for the more important purpose of wine-making.

Vines, under such circumstances, may be trained and pruned in a variety of forms, and fancy may here be more indulged than with such as are in the vinery. As this plant, like some others, produces its fruit on young shoots arising from the wood of the preceding season, it therefore becomes necessary that, that description of wood should be encouraged and equally distributed over the whole tree; and as the vine is apt to become naked, or thin of such wood towards the bottom, particularly under bad management, it is the more necessary to point out the necessity of counteracting that habit by a judicious use of the pruning-knife. However advantageous it may be in the management of vines under glass, to retain the shoots at some length, often of several feet, it is obvious that the same principle is not applicable to those in the open air. The practice of those, who cultivate vineyards for the purpose of wine-making, teaches us that cutting them short is advantageous, even in good climates; it is therefore more so with us in our less congenial one; and the success of those, who with us have carried this branch of horticulture to any extent, bears us out in the assertion. Vines in the open air break more regularly than when forced; therefore there can be no want of fruitful shoots, should the wood of the present year be shortened in at this time, to two, or often, where the buds are strong, to one eye. However, the eye nearest to the old wood is often weak, and less likely to produce a fruitful shoot. Our practice, in such cases, has been to rub off the eye nearest to the old wood, when weak, and to depend upon the next two for our supply. Where neatness is attended to in the minutiæ, this practice we own will in time make the spurs more bulky, but the extent of the crop will be proportionably great. As the finest flavored grapes are supposed to be produced at the extremities of the branches, or on those that are farthest from the root, it consequently follows that a mode of training similar to *figs.* 1, 2, and 3, will have that effect within the least space of wall, wholly occupied with vines.



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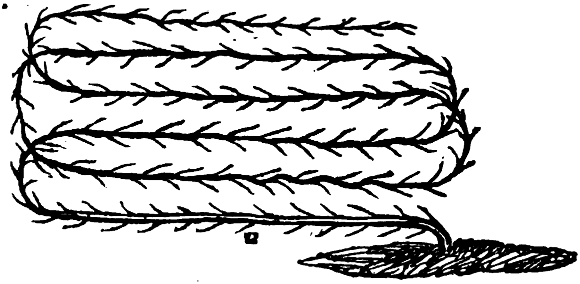

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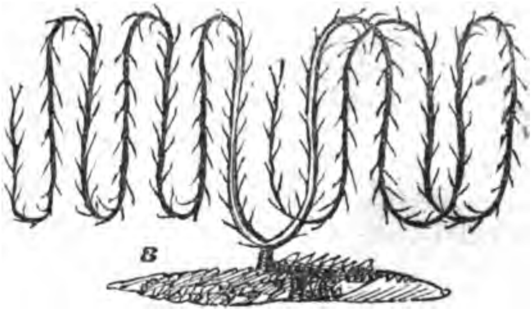

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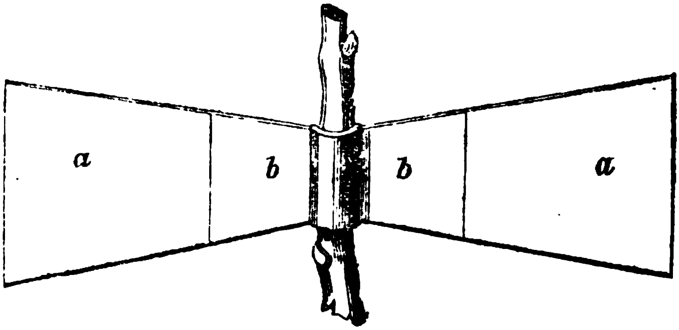
In conformity to this idea, as well as filling the empty spaces upon walls before the permanent trees fully extend themselves, a correspondent in the Horticultural Society's Transactions, proposes to train vines "horizontally under the coping of a garden-wall to a great distance, and by inverting the bearing shoots, the spaces between the other fruit-trees, and the top of the wall, could readily be filled up; and if different vines were enarched to the horizontal branch, the south wall of a large garden might be furnished with a variety of sorts from the stem and root of a single plant, the roots of which would not incumber the border, in which the other fruit-trees are growing. I have," he says, "an experiment of this kind now in progress in my garden. Within a few years past, I have gradually trained bearing branches of a small black cluster grape, to the distance of nearly fifty feet from the root, and I find the bunches every year grow larger and ripen earlier, as the shoots continue to advance."

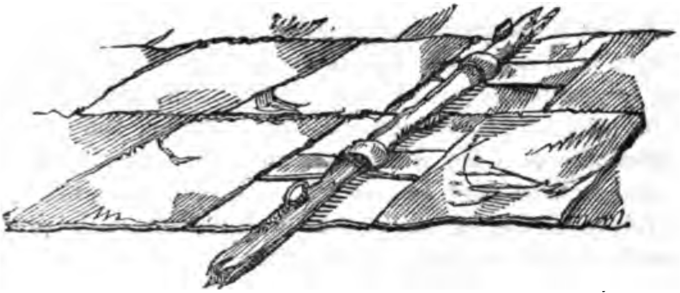
According to Knight's theory of the circulation of the sap, the ascending sap must necessarily become enriched by the nutritious particles it meets with in its progress through the vessels of the alburnum; "but I suppose," he adds, "that there are certain limits, beyond which the sap would be so loaded with nutriment, that it could not freely circulate."

In pruning the vine at any season, or in any way, it is necessary to make the cut at least half an inch above the eye from whence the shoot is expected to spring; and it must be done in a sloping direction, to prevent the lodgment of moisture, which might tend to bring on decay, and consequently the ruin of the bud or embryo shoot. When the operation of pruning is completed, the shoots should be neatly nailed again to the walls, and they will require no farther care till the season of summer-pruning arrives.

In regard to the method of training and fastening the shoots of vines on the roofs of cottages, Mr. Latham of Aylesbury, recommends the following plan. He says, in the Gardener's Magazine, that gardeners and others are often deterred from training trees over slate and tile roofs, from the expense and trouble of trellis-work; but, by following the simple method attempted to be shewn on the annexed sketch, slating and tiling may soon be covered with the rich clothing of the grape-tree.



In the winter-pruning, take pieces of tin, six or seven inches in length, (*fig. a b*), the refuse of the tin-workers' shops will do, and at convenient distances turn it over the shoot intended to remain, and thrust part of the two ends (*a a*) between the tiles or slates. The weight of the incumbent tile or slate will be sufficient to keep the shoot in the place, so as not to be disturbed by winds.



PLANTING FRUIT-TREES.

All sorts of fruit trees may now be planted, if the weather be fine and the ground tolerably dry. It is, however, not advisable to plant in heavy wet lands at this season, for spring planting will, in such cases, be attended with more success. However, in lands tolerably dry, if the ground has been prepared as directed in January, February, &c. they may be planted in dry days, any time from the beginning of this month till the beginning of April.

PRUNING SMALL FRUITS.

Such plants as gooseberries, currants, and raspberries, should now be pruned, if there be time to spare. However, any time from now till the end of February will do equally well. Nevertheless, the more of this work which is done at this time, the less will be left to be done in the spring, which is generally a busy time for the gardener. It ought to be a maxim never lost sight of, "Never to leave for to-morrow, what can conveniently be done to-day." We can form no idea of the hinderance and obstruction which we may meet with in the winter months, therefore the more that is done now, with propriety, to forward the work of the garden, the greater the benefit which will be derived.

PLANTING SMALL FRUITS.

All sorts of small fruits, such as gooseberries, currants, and raspberries, should now be planted, if not done last month, unless the weather and soil be both very wet, in that case, the planting may with propriety be delayed some time longer.

DIGGING THE GROUND AMONG SMALL FRUITS.

As the pruning of these plants proceeds, let the ground be dug up in as rough a manner as possible, so that all the weeds, &c. may be buried; and if it be found inconvenient to prune them now, nevertheless let the digging go on, and take the opportunity of a few frosty days to prune them, when the ground will be hard enough to bear without much treading. If this rough digging can be done twice throughout the winter months, there is no doubt but the eggs or larvæ of many insects will be destroyed, by being turned up and thereby exposed to the frost, and more particularly to birds, which will now be more industrious in looking for such food, as their other sources of support are now nearly exhausted.

GATHERING LATE FRUITS.

If the season has been late, many of the late fruits will, probably, not yet be gathered in; this should now be done, before the frosts set in too severely upon them, and in that case, spoil them for keeping. In backward situations, the late fruits should have as much of the tree as possible, even although a slight frost should happen. It is of the utmost consequence to them that they be fully ripened; for if pulled before they be ripe, they will not keep so well, and are apt to shrivel and lose their flavor. Such, therefore, as can be for some time, previously to ripening, covered at night with mats, for fear of frost, will be much benefited thereby. For directions for gathering and storing, see (*last month*).

DIGGING THE GROUND AMONG YOUNG ORCHARD-TREES.

The following has been laid down by the late Nicol for the management of young orchard-grounds, until the trees come to a full bearing state, and the practice probably cannot be improved.

"If the cultivation of orchard-fruits be industriously followed, the ground among the trees should be digged and kept with the hoe, for the first seven or eight years after planting. In order to defray the expense incurred in doing so, it is very proper to crop the ground with vegetables to a certain extent; but by no means to such an extent as to injure the trees; which, however, is too frequently the case, and is very erroneous. If the following rule, with respect to this matter were followed, the expense of keeping the ground and the rent would be fully paid; and the trees would not be injured, but, on the contrary, be benefited. Crop to within two feet of the trees the first year; a yard the second; four feet the third; and so on until finally relinquished; which of course would be against the eighth year, provided the trees were planted at the distances, and as directed in "The Planting of Orchards."

"By this time, if the kinds have been well chosen, the temporary trees will be in full bearing, and will forthwith defray every necessary expense while they remain, or until the principal trees come into a bearing state, and it becomes necessary to remove them; after which, the ground should be sown down in grass. But until then, the ground should be properly cultivated, though not cropped, close to the trees; and a moderate quantity of manure should be digged in every second or third season.

"This is a very proper time for doing so, whether the intervals be under crop or not. If they be under crop, pay respect to the spaces next the trees only; but if not, the whole ground may be digged. It should be laid up in a rough manner," as we have so often recommended, "giving it as much surface as possible, in order that the weather may fully act upon and meliorate the soil, thus fallowing it as far as the case will admit. Observe to dig carefully near the trees, and so as not to hurt their roots and fibres."

In digging among trees at all times, particularly where the soil is shallow and the roots near the surface, we would recommend using a fork instead of a spade, as less likely to injure the roots.

DECEMBER.

There is scarcely any thing to be done in the fruit-garden this month, that cannot be done, with equal propriety, either the preceding month, or in the two subsequent months; we would, therefore, advise a speedy fulfilment of the directions laid down for last month and in January. This may be called the dead time of the year. However, neatness and regularity should ever be before the eyes of the gardener, who wishes to excel. . In this month, when the weather will permit, all spare ground in the fruit-garden, which is not under crop, should be trenched, where the roots of the trees will admit of it; and where not, it should be rough dug. Pruning of every tree should be forwarded with all diligence; and where grounds or borders are in want of renewing, preparatory to being new planted, that work should be gone on with. The clearing of fruit-trees of moss and insects, as far as the latter can be effected, should occupy a share of his attention. In the compost-yard, much is to be done in turning over compost heaps, and in bringing in fresh matter for forming others. Indeed, this is one of the most useful employments of the gardener in winter, and one that is more neglected than any other. Wherever alterations are going on, on the manor, in the park, or by the sides of turnpike, or other roads, the gardener is most likely to find materials which will be either in their natural state highly useful to him for his fruit-tree borders, or by preparations, by adding manure or other materials, to correct the lightness or stiffness of such matter to a proper texture, to be afterwards allowed to prepare for a year, and during that time frequently turned over and well incorporated. Such preparations are of all the most useful for producing fine fruit and healthy trees, and should be collected in quantities, according to the size and circumstances of the place. In all places, the gardener should be allowed a horse or two, for the sole use of the garden; by such regulation much will be done that otherwise would be left undone, and no employment can be of so much consequence as the collection of materials for compounds; and this cannot be done if the means be not allowed him.

A

SYSTEMATIC CATALOGUE

OF

APPLES,

ARRANGED AS DESSERT AND CULINARY FRUITS.

APPLE, *Pyrus Malus*, of *Linnæus*,—belongs to the class *Icosandria*, and order *Pentagynia*, and natural order *Rosaceæ*. Is a native of Britain, as well as most parts of Europe.

The apple is, of all the numerous fruits cultivated in the British gardens, the most useful; and is brought to a higher degree of perfection with less trouble than any other. It can accommodate itself almost to all soils, situations, and climates, that the middle and southern parts of Europe afford. At what time, or in what manner, the cultivated apple attracted the notice of the inhabitants of these kingdoms is not known. The uncultivated apple, or crab, must have been known to the aborigines; and the cultivated apple, in all probability, was introduced by the Romans. Pliny, the Roman Historian and Naturalist, knew of twenty varieties. It is probable that all, or at least part of those were brought by that people into this island; and if they, as well as other fruits, were lost after the Romans deserted this country, they must have been re-introduced by the Normans, soon after the conquest. It is not improbable, but that many of the apples introduced by the Romans were first planted in the neighbourhood of Hereford, where the Romans were long stationed. Haller mentions apple-trees in Herefordshire that had attained the great age of one thousand years, and were still prolific; but Mr. Knight considers two hundred years to be the ordinary duration of that tree. Herefordshire, it appears, was planted with apple and pear-trees at an early period: the aged pear-tree at Holme Lacey being a proof of that circumstance, as well as of the great longevity of that tree. Lord Scudamore, the then proprietor of Holme Lacey, while ambassador at the court of France, in Charles the First's time, is said to have collected, in Normandy, grafts of cider-apples, which he afterwards had grafted and planted in Herefordshire. In Henry the Eighth's time, his fruiterer, Harris, planted many Flanders apples and pears in Kent, probably some of which remain till this day. Of the merits, or number of varieties of apples cultivated so early, we have no certain information; and it would be unjust to judge of them by their present qualities. They, like most other plants, are supposed to have a limited duration; and therefore, on taking a retrospective view of the fruits of the early cultivators, or judging of the merits of such fruits by the old trees found near monastic ruins, we should not be doing them sufficient justice, as they are found so degenerated, or diseased, as no longer to deserve the attention of the cultivator; still they may have been excellent fruits when in their prime. Knight observes, "the *moil*, and its successful rival the *red-streak*, the *musts*, and *golden pippin*, are in the last stage of decay, and the *stire* and *fox-whelp* are hastening rapidly after them." The same horticulturist, after having made a variety of experiments to propagate or renew the old sorts of apples, comes to this conclusion: "I think," he says, "that I am justified in the conclusion, that all plants of this species, however propagated from the same stock, partake in some degree of the same life, and will attend the progress of that life in the habits of its youth, its maturity, and its decay; though they will not be any way affected by any incidental injuries the parent tree may sustain after they are detached from it." Speachly, and latterly Williamson, in Hort. Trans., consider that the deterioration of the apple and pear, as well as other fruits, may be owing to the changes to which the climate of this country is supposed to have been subject; and that the return of genial seasons will restore to us, from old trees, as good fruit as heretofore. Such also is the opinion of the compiler of the Encyclopædia of Gardening; that intelligent writer considers Knight's doctrine contrary to the general analogy of vegetable life. "It is," he observes, "unquestionably true, that all varieties have a tendency to degenerate into the primitive character of the species; but to him it appears equally true, that any variety may be perpetuated, with all its excellences, by proper culture; and, more especially, varieties of trees. However unsuccessful Knight may have been in continuing the *moil*, *red-streak*, and *golden pippin*, we cannot," he says, "alter our conviction, that, by grafting from these sorts, they may be continued such as they are, or were, when the scions were taken from the trees to the end of time. As to plants propagated by extension, partaking, in some degree, of the same period of life as the parent, we cannot," he adds, "admit the idea as at all probable. Vines, olives, poplars, and willows, have been propagated by extension for ages, and are still, as far as can be ascertained, as vigorous as they were in the days of Noah or Pliny."

DESSERT APPLES.

1. Pippin, Old Golden.—This is one of the most ancient and best British fruits; fit either for dessert, kitchen, or cider. This useful sort is fast hastening into decay. The fruit is small, roundish, of a beautiful golden color, and deserves a wall in most situations. It comes to perfection upon standards in favorable situations. The French admit this to be of English origin, and it is almost peculiar to this country. It does not succeed well upon the continent. It ripens in October, and keeps through the winter.

2. Pippin, Golden Warwickshire.—See No. 143.

3. Pippin, Downton.—A seedling, by Knight; originated about 1804. Is a juicy fruit, and resembles the golden pippin; is fit either for dessert or cider; fruit small, round, and yellow; flesh firm and sweet; lasts from October till March.

4. Pippin, Elton, or *Knight's Golden Pippin.*—A seedling, by Knight; originated about 1802. Excellent for dessert or cider; tree a great bearer; fruit middle-sized, round, gold-colored, with spots; flesh firm and sweet. In use from October till February.

5. Pippin, Franklin's Golden.—A sub-variety of the golden pippin; procured in 1780. Fruit middle-sized, conical, with gold and dark spots; keeps from November till March; flesh firm, and highly aromatic; middling bearer.

6. Pippin, Hughes's New Golden.—A French fruit; procured in 1803. Fruit small, flat, and yellow; flesh firm and sweet; keeps from October till March. Tree rather delicate.

7. Pippin, Fall.—Sent to England by Mr. Cobbett, and described in Coxe's work on American Fruits, as worthy of general cultivation.

8. Pippin, Sudlow's Fall.—To distinguish it from the last, it bears the name of its introducer, John Sudlow, Esq., of Thames Ditton. Fruit small, about two

inches in diameter each way; eye large, with a wide shallow cavity, surrounded by regular folds or plaits; skin yellow, partially tinged with green, the whole sprinkled with minute brown spots; flesh inclining to yellow, crisp, very juicy, with a rich pleasant acidity. It ripens in November.

9. Pippin, Balgonie.—An esteemed Scotch fruit, and known by the name of the Fife golden pippin. Is supposed to have been the original golden pippin imported from England about the time that that esteemed fruit was in its perfection. It inherits every virtue and property of the old golden pippin. Fruit middle-sized, round, yellow and green; flesh firm, juicy, and aromatic; keeps from October till May. Tree a great bearer, and hardy.

10. Pippin, Lemon.—Fruit large, oval, golden yellow; flesh firm and juicy; keeps from October till March. Tree vigorous, and a great bearer.

11. Pippin, Ribston.—Originated at Ribston Hall, in Yorkshire, in 1760. One of the finest fruits we have; rather above the middle size, round, and flattened; green, or dark green, when upon a standard, or much shaded; yellow and bright red, when upon a wall. In Scotland, it is often planted upon the best walls, and becomes a fruit of the first class. Upon standards, it fruits freely; being, in all situations, a great bearer. Keeps from November till March, and sometimes longer. It is not so fine a fruit when grown in England.

12. Pippin, Newtown.—Supposed to be of American origin, and by some to be originally from Devonshire. Much esteemed in America, and known by the name of *Reinette de Canada*, as well as *Newtown Pippin*. It was brought here from America, in 1790. Fruit large, conical, yellow and red next the sun, greenish yellow where shaded. When much exposed, becomes almost red next the sun, and a beautiful golden colour when partially shaded; flesh firm, and flavour aromatic. Should be gathered before it becomes too ripe; if kept too long, is apt to become mealy; keeps from November till January. Healthy tree, and middling bearer.

13. Pippin, French, or *Pigeonette de Row.*—A French apple. Fruit middle-size, conical, dark red and yellow; flesh firm and aromatic; keeps from October till March. Tree indifferent bearer; habit weak and pendulous.

14. Pippin, Borsdorf, or *German Queen's Pippin.*—A much-esteemed fruit in Germany. Fruit middle size, conical, yellow and green; an excellent table fruit; flesh firm and aromatic; keeps from September till February. Tree healthy, and middling bearer.

15. Pippin, New Red, *New Scarlet.*—Fruit beautiful and middle-sized; color dark red next the sun, yellowish where shaded; keeps till March. Tree middling bearer.

16. Pippin, Dalmahoy.—An esteemed Scotch fruit; rather smallish, round, and green; flesh firm and aromatic; excellent table fruit; keeps from November till May. Tree slender, hardy, and a great bearer.

17. Pippin, Kentish, *Old Kentish Apple.*—An old variety. Fruit large, conical, yellow and red; flesh firm and sweet. Tree luxuriant grower, and good bearer. Keeps from December till March.

18. Pippin, Orleans.—Fruit small, flat, dark red, resembling Orleans plums; flesh firm and juicy; keeps from October till February. Tree slender.

19. Pippin, Yellow Ingestrie.—Resembles the golden pippin. A seedling, rose in 1800, by Knight. Fruit middle-sized, round, and yellow; flesh firm and juicy. Tree large and handsome. Fruit keeps from October till February.

20. Pippin, Red Ingestrie.—Also resembles the golden pippin; a seedling, rose in 1800, by Knight. Fruit middle size, round, red; flesh firm and juicy; keeps from October till February. Tree large and handsome.

The yellow and red Ingestrie Pippins sprang from two seeds of the same apple, which occupied the same cell; their names are derived from Ingestrie, the seat of the Earl Talbot. The Grange Apple and Downton Pippin also sprang from the same parents with the Ingestries; from the seeds of the orange pippin, and pollen of the golden pippin. The original trees are at Wormsley Grange, Herefordshire.

21. Pippin, Oslin, *Original Pippin*, *Arbroath Pippin.*—Supposed to have been first brought from France by the monks settled at Arbroath, in Scotland, at the early period of the building of, or probably soon after that celebrated abbey was built. It is supposed to be the *aurea mala*, or original golden apple. Fruit middle size; greenish yellow when shaded, golden yellow when exposed to the sun; flesh softish, and very juicy; is not a good keeper. In favourable soils is a great bearer. Much esteemed in Scotland.

22. Pippin, Padley's.—Seedling, rose in 1800. Fruit oval, prickly, and freckled; flesh richly perfumed; keeps from September till February. Tree hardy, and a good bearer.

23. Pippin, Queen's. — Fruit small, round, yellowish green; flesh firm and aromatic; keeps from January till May. Tree weakly; middling bearer.

24. Pippin, Kirkton, *Crackled Pippin.*—A Scotch apple. Fruit flat, middle-sized, gold and russet; flesh firm and sweet; keeps from September till January. Tree a good bearer, small and hardy.

25. Pippin, Fearn's.—Fruit small, conical, scarlet and yellow; flesh firm, juicy, and aromatic; keeps from October till March. Tree an indifferent bearer, and of slender habit.

26. Pippin, Orange.—A Herefordshire fruit. Fruit middle-size, conical, gold and red; showy at table; flesh firm, juicy, and sweet; keeps from October till March. Tree large and very luxuriant; middling bearer.

27. Pippin, Lisbon.—Fruit middle-sized, conical, red next the sun, red and yellowish where partially shaded; flesh firm and rather sharp; keeps from November till February. Tree hardy and large; good bearer.

28. Pippin, Gogar.—Originated at Gogar, an ancient seat near Edinburgh. Fruit middle-sized; an excellent table apple; keeps very late. Tree hardy, free grower, and good bearer.

29. Pippin, Cockle's.—Fruit small, round, russet-white where exposed, red and yellow where less exposed; flesh firm and sweet; in eating from January till April, Tree of humble growth, and a middling bearer.

30. Pippin, Paradise.—Fruit middle size and flat, red and green; flesh firm and juicy; mealy when too ripe; keeps from October till February. Tree smallish; a good bearer.

31. Pippin, New England.—An American fruit, introduced in 1780. Fruit large, angular, green and brown; flesh firm and sweet; keeps from October till March. Tree large and vigorous, and a good bearer.

32. Pippin, North's New Scarlet.—A seedling, recommended by the Hort. Soc. Fruit middle-sized, round, gold and pale red; flesh firm and aromatic; keeps from October till March. Tree healthy, and middling bearer.

33. Pippin, King of the Pippins.—Fruit large, conical, gold streaked, white, and red; a beautiful fruit; flesh firm and juicy; in eating from January till March. Hardy upright growing tree, and an excellent bearer.

34. Pippin, Whitmore.—Fruit large, round, streaked white, red, and yellow; handsome fruit; flesh firm and sweet; keeps from November till May. Tree luxuriant, and an excellent bearer.

35. PIPPIN, BRINDGWOOD.—A seedling, rose in 1800, by Knight. Fruit small, round, reddish green; flesh rich and sweet; keeps from September till March. Tree hardy, and good bearer. This variety sprang from the golden pippin and golden Harvey.

36. PIPPIN, WORMSLY.—Recommended in Hort. Trans. Fruit small, flat, green and yellow; a valuable addition to our gardens; flesh firm and juicy; keeps from October till February. Tree hardy, and a great bearer.

37. PIPPIN, WOOD'S NEW TRANSPARENT, *Wood's Huntingdon*.—From seed of the golden pippin, rose at Huntingdon in 1798. Fruit small, flat, green and yellow; flesh firm and juicy; keeps from October till March. Tree hardy, and great bearer.

In the Catalogue of the Horticultural Society of London, are enumerated 163 sorts of Pippins; of these 18 are varieties of the golden pippin. We avoid enumerating names only; and as no description is given of them, we must refer the enquiring reader to that Catalogue.

DESSERT PEARMAINS.

38. PEARMAIN, SUMMER.—Fruit middle-sized; conical, green striped with red; flesh soft, juicy, and sweet, having rather a peculiar flavor from almost every other apple. In use from August till October; should be eaten soon after gathering; soon gets mealy by keeping. Tree hardy, and a good bearer.

39. PEARMAIN, LOANS.—An esteemed apple in Scotland, as well as the last. Fruit larger than the last, oval, dull green where shaded, brilliant red where exposed to the sun; flesh firm and sharp; keeps from September till May. Tree middle size, and a good bearer.

40. PEARMAIN, SPANISH.—Fruit middle size, oblong and showy, dark red; flesh firm and sharp; keeps from September till May. Tree large, and a good bearer.

41. PEARMAIN, KIRK'S SCARLET.—Fruit middle size, oval, scarlet where exposed to the sun, red and yellow where more shaded; flesh firm and juicy; is an excellent fruit; keeps from October till June. Tree rather slender, and a middling bearer.

42. PEARMAIN, GOLDEN.—Fruit large, roundish, deep red where exposed to the sun, and yellowish in the shade; an excellent fruit; keeps from August till October. Tree large, and a good bearer.

43. PEARMAIN, LAMB ABBEY.—Supposed from seeds of the Newtown pippin, in 1805; recommended in the Hort. Trans., where it is figured. Fruit rather large, oval or pyramidal, yellow, green, and spotted red towards the sun; flesh crisp and aromatic; an exceedingly fine fruit; keeps from September till April. Tree luxuriant and handsome; good bearer.

44. PEARMAIN, OLD ENGLISH.—Fruit middle-sized, conical, red and yellow; flesh firm and juicy; in eating from January till March. Tree middle-sized, and great bearer.

45. PEARMAIN, KERNEL.—Fruit small, oval, streaked white and red; flesh firm and juicy; in eating from January till May. Tree rather tender, middling bearer.

In the Catalogue of the Horticultural Society, there are enumerated 33 sorts of pearmains.

DESSERT NONPAREILS.

46. NONPAREIL, SCARLET.—From seed at Esher, about 1780, in the garden of a small public-house; first cultivated in the London nurseries by Grimwood. Fruit

middle-sized, flattened, russet and red; flesh firm and juicy; like all the other nonpareils high flavored; in eating from September till March. Tree hardier than any of the other sorts; a great bearer: all this division requires a wall in most situations.

47. NONPAREIL, PITMASTON.—From seed, in 1815. Fruit about the general size of the others in this division, and like them, flat and compressed, dull green, russet, and yellow; flesh firm, juicy, and aromatic; keeps from October till May. Tree slender twigged, often not ripened to the extremities of the shoots; a good bearer.

48. NONPAREIL, EARLY.—Fruit small, flat, reddish russet; flesh firm and juicy; is in eating from September till February. Tree tender; a good bearer.

49. NONPAREIL, WRIGHT'S.—Fruit large, flattened, brownish green; flesh firm and aromatic; keeps from November till June. Tree a great bearer, delicate, and makes very small wood.

50. NONPAREIL, ROYAL.—Fruit small, flattish, green and red; flesh firm and juicy; in eating from January till April. Tree slender twigged; a great bearer.

51. NONPAREIL, M'DONALD'S.—From seed, rose in the Dalkeith gardens about 1806; much esteemed in Scotland. Fruit small, round, (the only round one in this division,) fine eye, greenish and red; flesh firm, quick, and acid; keeps from December till April. Tree hardier than any of the nonpareils.

In the Horticultural Society's Catalogue, there are enumerated 30 sorts of nonpareils.

DESSERT RUSSETS.

52. RUSSET, DREDGE'S.—Fruit small, round, russet streaked with red; flesh firm and juicy; keeps from November till July. Tree hardy, middle size, and good bearer.

53. RUSSET, LETHERCOAT, *Royal Russet.*—Fruit large, round, russet and red; flesh firm and aromatic; keeps from October till April. Tree hardy, large growing, and a great bearer.

In the Horticultural Society's Catalogue, there are enumerated 29 russets.

DESSERT RENNETS.

54. RENNET, GOLDEN, *Reinette dorée.*—Of French origin. Fruit middle-sized, flattish, red and yellow; flesh firm and juicy; showy fruit; keeps from September till February. Tree middle-sized, and a good bearer.

55. RENNET, HOLLOW-EYED, *Cornwall.*—Fruit small, flattish, green, yellow, and russet; flesh firm and aromatic; a much-esteemed fruit; keeps from October till April.

56. RENNET, GREY, *Grise.*—Of French origin. Fruit middle-sized, round, grey; flesh firm and sweet; keeps from October till March. Tree middle-sized, and a good bearer.

In the Horticultural Society's Catalogue, are enumerated 82 rennets.

DESSERT CALVELLES.

57. CALVELL, SUMMER RED.—Fruit small, oval, reddish white; flesh soft, juicy, and sweet; keeps from September till November. Tree hardy, middle size, great bearer.

58. CALVELL, SUMMER WHITE.—Fruit small, oval, whitish green; flesh soft, juicy, and acid; keeps from September till the end of October. Tree hardy, middle size, great bearer.

59. **Calvell, Autumn,** *Calville d'Automne*.—Fruit large, oblong, reddish brown; flesh crisp, juicy, and vinous; much esteemed in France; keeps from October till January. Tree hardy, and good bearer.

In the Horticultural Society's Catalogue, are enumerated 11 calvelles.

DESSERT QUEENINGS.

60. **Queening, Summer.**—An esteemed Scotch apple. Fruit middle-sized, often large, much angled, greenish white, becoming dark, as if bruised, when over ripe; soft and very juicy; flavor excellent; ripe in August or September; keeps only a few days. Tree hardy, and a great bearer.

61. **Queening, Kernel.**—Fruit large, angled, deep red and white; flesh firm and tender; an excellent cider as well as dessert fruit; keeps from October till April. Tree hardy, and great bearer.

In the Horticultural Society's Catalogue, are enumerated seven queenings.

DESSERT CODLINGS.

62. **Codling, Spring Grove.**—Fruit small, conical, pale green; flesh soft and uicy; keeps from July till September. Tree hardy, and a great bearer.

DESSERT SORTS,

With Names either Descriptive, Arbitrary, Local, or Indicative.

63. **Alexander.**—A Russian or Ukraine fruit. A magnificent fruit, often 16 inches by 14 inches in circumference, and weighs 19 ounces; of an obtuse conic shape, delicate red and green color; flesh firm and vinous; keeps from November till January. Tree middling large, very hardy, and tolerable bearer.

64. **Aromatic Apple.**—Is said to have been an inhabitant of Cornwall for centuries, though little known out of that county. The tree is an excellent bearer, and the fruit keeps till returning summer. The trees generally show marks of age and decay.

65. **Beauty of Kent.**—Fruit large, conical, red next the sun, red and yellow streaked where more shaded; flesh firm, vinous; very showy fruit; keeps from September till April. Tree large and hardy, and a good bearer.

66. **Belle Grisseldine.**—Of French origin. Fruit middle-sized, flattish, yellow and red; flesh firm and juicy; very showy fruit; keeps from September till March. Tree spreading, hardy for a French fruit, and a middling bearer.

67. **Brown Burnt-island,** *Brown Burknott*.—Originated from seed in Scotland, in 1760. Fruit small, conical, pale green; flesh soft and juicy; propagates freely by cuttings; keeps from September till January. Tree middle-sized, and a great bearer.

68. **Black.**—Fruit middle size, conical, dark mahogany color; flesh firm and sweet; singular fruit; keeps from September till April. Great bearer.

69. **Best-poole,** *Bess*, or *Bessy-pool*.—Of Welch origin. Fruit middle size, round, pale green and red; flesh firm, crisp, and vinous; in eating from January till April. Tree hardy, and a great bearer.

70. **Bache's fine Small.**—Fruit small, oval, red and green; flesh firm and juicy; in eating from January till May. Tree slender and spreading; great bearer.

71. **Brandy Apple,** *Golden Harvey*.—Fruit small, resembling a golden pippin in shape, yellowish russet color, fine flavor; in use from January till March. Is much esteemed in Herefordshire, where it has been long cultivated. Tree handsome habit, and extremely hardy.

72. **Carnation.**—Fruit middle size, oval, when exposed to the sun is a handsome showy fruit, green and red striped with carnation; flesh firm and vinous; keeps till May. Tree large, and a good bearer.

73. **Cadbury Pound.**—Fruit middling size, oblong, pale green; esteemed a good fruit; keeps from November till March. Tree free grower, and great bearer.

74. **Charteraux Court Pendu.**—Of French origin. A fine-flavored fruit, beautiful carmine next the sun, often striped with yellow and snowy white when shaded; flesh very tender and juicy; should be eaten off the tree. A good bearer, little known in England, much cultivated in Scotland, both as espalier and standard; keeps only a few weeks.

75. **Court Pendu, White,** *Corps Pendu*, or *Hanging Body*. — Fruit middle-sized, long, yellowish, hanging downwards (from thence the name); flesh firm and sugary; is in eating from January till March. Tree spreading; a good bearer.

76. **Dredge's Fame.**—Originated from seed in Wiltshire, about 1770. Fruit rather large, round and flattened, greenish yellow where shaded, and streaked with red where exposed to the sun; flesh firm, highly aromatic; an esteemed fruit; keeps from November till March. Tree forming a handsome outline, and a great bearer.

77. **Dredge's Fair Maid.**—Another Wiltshire esteemed fruit, where it originated from seed about 1765, and is there known by that name, or *Dredge's Fair Maid of Wishford.* Fruit middle-sized, rather round, green where shaded, where exposed beautifully striped with red; flesh firm and tender; keeps from November till March. Tree handsome, and is a great bearer.

78. **Dredge's Queen Charlotte.**—Another Wiltshire fruit, where it originated from seed about 1770. Fruit middle-sized, oval, and flattish, gold color and red; flesh firm, and highly aromatic; keeps till February. Tree middle-size, hardy, and is a great bearer.

79. **Dredge's Beauty of Wilts.**—Another Wiltshire fruit. Fruit rather large, fine bright yellow, spotted red towards the sun. Is one of our finest apples, in point of general utility; keeps good for the table till March.

80. **Dredge's White Lily.**—A beautiful apple, of exceedingly high flavor, and keeps good for the table till March. Originated in Wiltshire about 1750.

81. **Elton's Yellow Kernel.**—Fruit middle size, round, yellow; handsome good table fruit; keeps till March. Tree free grower, and great bearer.

82. **Esopus Spitzemberg Apple.**—Of American origin; of so much excellence that it may well deserve the protection of a south wall, without which it is probable it will not succeed in this climate. Fruit large, form oblong, skin smooth and fair; the color a lively and brilliant red, approaching to scarlet, with many small yellow spots; flesh yellow, juice rich; is in maturity about Christmas.

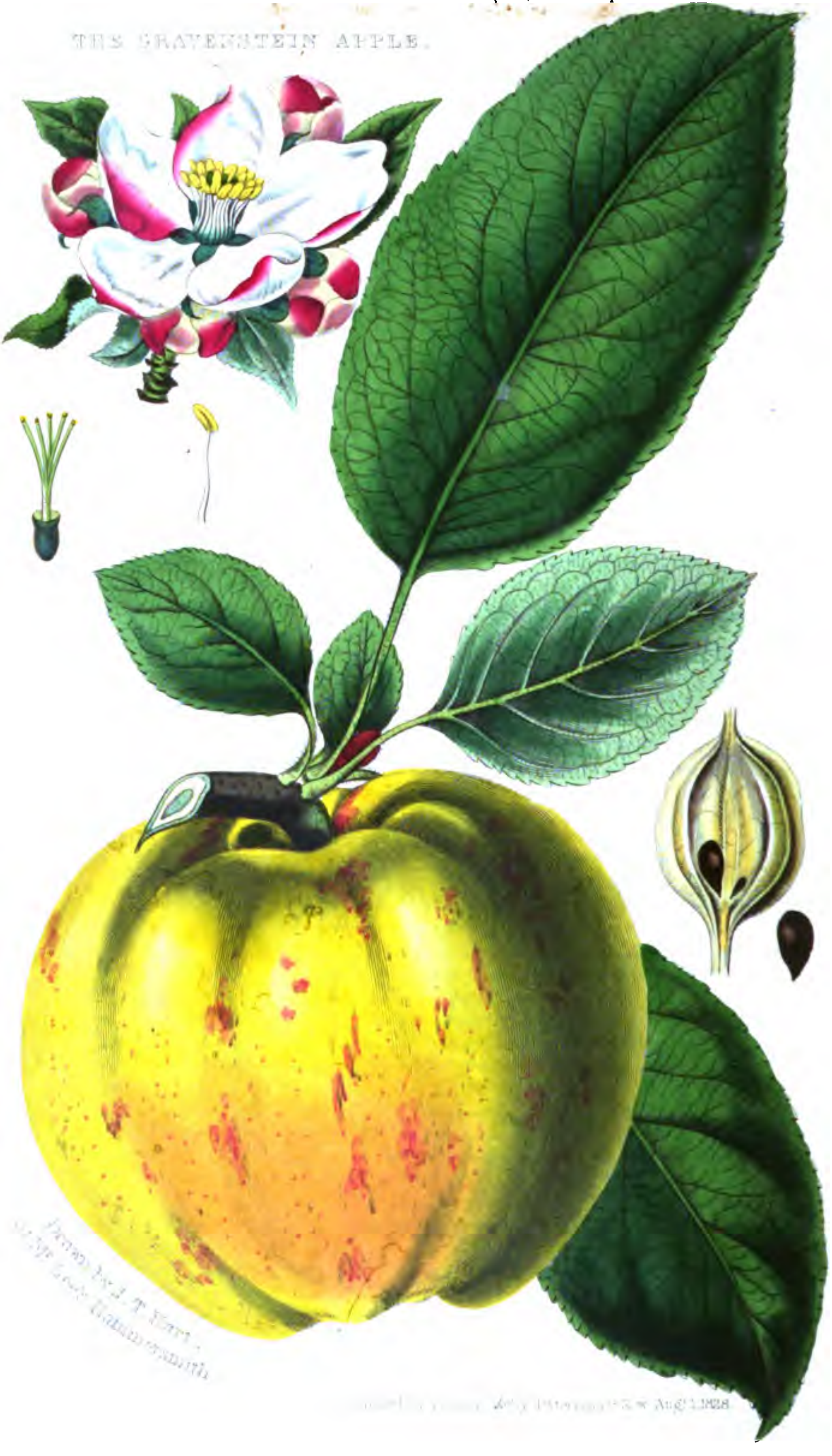
83. **Fameuse,** or *Snow Apple.*—Introduced by Mr. Barclay, of Brompton, in 1790, from Canada. Fruit large, conical, dark red and yellow; flesh soft, white as snow, and juicy; keeps from October till February. Tree hardy, and a great bearer.

84. **Fennouillet Gris,** *Pomme d'Anis, Fennel, Anise*, or *Anise Apple.*—Of French origin. Fruit middle-sized, of a grey color; flesh tender, and has a spicy taste like anise-seed; is ripe in September and October; does not keep. Tree small, but a good bearer; exceedingly well calculated for growing in pots, or vases.

85. **Fig-apple.**—Fruit small, oval, greenish yellow, fig-shaped (from thence the name); flesh crisp and sweet; is in eating from September till January. Tree very dwarf, and is a great bearer.

86. **Flower of Kent.**—Fruit large, round, yellow, showy; flesh tender and vinous; keeps from September till April. Tree strong grower, and a good bearer.

THE GRAVENSTEIN APPLE.



Drawn by J. T. Hart.
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87. **Gloucestershire Creeper.**—Fruit small, conical, light green; flesh soft and sweet; keeps from August till December. Tree readily propagated by cuttings or layers; great bearer.

88. **Golden Harvey.**—See *Brandy Apple.*

89. **Golden Knob.**—An English seedling. Fruit small, roundish, gold and russet; flesh firm and juicy; keeps from October till April. Tree hardy.

90. **Godolphin.**—Originated in Lord Godolphin's garden in 1792. Fruit large, oblong, streaked with white, red, and yellow; very beautiful; flesh firm and acid. Tree large, and a good bearer.

91. **Gillyflower.**—Fruit large, oval, greenish where shaded, yellow and red next the sun; beautiful; flesh crisp and vinous; keeps from September till March. Tree middle-sized, and a good bearer.

92. **Golden Gloucester.**—Fruit middle-sized, golden yellow where shaded, red towards the sun; keeps till March.

93. **Gravenstein Apple.**—This is esteemed the best apple in Germany and the Low Countries, and is well entitled to the high reputation it has acquired. Resembles the Ribston pippin in size, and not unlike it in form. Ripens in October, and will keep till December, and may be fairly considered a rival to our Ribston pippin. The figure in this work was taken from a tree in the private garden of Mr. Lee, of the Hammersmith nursery, by Mr. Hart, Jun. The name is derived from Gravenstein, a ducal estate in Sleswick, and was first described by Hirschfeld. It is supposed to have been accidentally raised from seed in the gardens of the Duke of Augustenberg, in Holstein, although some suppose it to be of Italian origin. It is highly esteemed all over the north of Europe, and by them considered one of their best sorts. Fruit generally round, somewhat flattened, rather angular on the sides, eye sunk in a deep cavity, surrounded by several projecting folds or knobs; stalk very short, deeply inserted; skin smooth, of a fine clear straw color, streaked with red where exposed to the sun; flesh of a pale yellow color, not very fine in texture, juicy, and with a high vinous, sweet taste.

94. **Hall-door.**—An esteemed Kentish apple. Fruit large, flat, yellowish green where shaded, streaked with red towards the sun; flesh firm, acid; in eating from January till March. Tree vigorous, and a great bearer.

95. **Hubbard's Apple.**—A Norfolk apple. Fruit middle-sized, not handsome, is notwithstanding one of our best table apples; is in eating from January till April.

96. **June-eating,** *Jenetin, Geneton.*—Fruit small, roundish, yellow, sometimes reddish; flesh tender and juicy, rather sharp when not ripe; is apt to get mealy if over-ripe; should be eaten from the tree. Is one of our earliest fruits, and keeps for a week or so good. Tree of humble growth, suited for forcing or planting in pots; great bearer. Is ripe often in the end of June (hence the name), and always in the beginning of July.

97. **July Flower Apple.**—An excellent Cornish apple. Fruit conical, color yellowish green, red towards the sun; leaves remarkably long and narrow. Tree luxuriant and irregular, not easily trained; the fruit, when cut, emits an agreeable perfume.

98. **Julien,** or *Early Julien.*—Introduced by Mr. H. Ronalds, from Scotland. Is a very excellent early variety, ripening in the beginning of August. Middle size, of an irregular form, with many ribs or angles on the sides, which become very prominent round the eye; skin of a uniform pale yellow; flesh approaching to yellow, firm and crisp, having much the highest flavor of any of our early apples.

99. **Lady's Finger.**—An esteemed Scotch apple. Fruit middle-sized, conical, rather long, approaching to cylindrical, yellowish where shaded, reddish where exposed to the sun; flesh delicate, juicy, and high flavored; keeps from October till December. Tree rather small, pyramidal or upright, and a good bearer.

100. Long-laster.—Fruit middle-sized, angular, fine yellow where shaded, beautiful reddish color next the sun; keeps till the middle of May.

101. Margill.—An Oxfordshire apple. Fruit small, roundish, red and yellow; highly esteemed fruit; flesh firm and aromatic; keeps from November till March. Tree small, delicate-twigged, and a great bearer. Is often sold in the London market for a nonpareil, which it much resembles.

102. Margaret Apple, *Red June-eating.*—Fruit small, conical, yellow where shaded, streaked with red towards the sun; flesh sweet and tender, ripens in the end of July, or beginning of September, and keeps for a few weeks. Tree hardy, making small willow-like shoots; is nearly as great a bearer as the common June-eating.

103. Nonsuch.—An esteemed Scotch apple, where it is often grown upon walls. Fruit middle size, green where shaded, beautifully striped with brownish red where exposed to the sun; flesh firm, juicy, with a pleasant acid; ripens in September, and keeps till October or November. Is more apt to shrivel in keeping than almost any other apple. Tree free grower, and a good bearer.

104. Oak Peg, *Oaken Peg.*—Fruit middle-sized, oval, green and white streaked; flesh firm and juicy; is in eating from January till July. Tree rather twiggy, hardy, and a middling bearer.

105. Ord Apple.—Originated about thirty years ago, by John Ord, Esq., at Purser's Cross, near Fulham, from the seed of the Newtown pippin, imported from America; is often sold in the London nurseries under the name of Newtown pippin. The fruit, although without any external beauty, is remarkably good, and possesses the property of a melting softness in eating, so that it might be said to melt in the mouth. The original tree is now in a very dilapidated state (if alive). The climate of this country is not sufficiently congenial to it.

106. Pomroy, *Ring Apple.*—Of French origin. Fruit middle-sized, round, green and yellow; flesh soft and somewhat acid; is in eating from July to September. Tree low spreading habit, and only a middling bearer. It has a sub-variety, which is a winter fruit.

107. Pomme d'Apia, *Apius's Apple,* or *Coreless Apple.*—A French fruit. Fruit very small, roundish, yellow in the shade, bright red next the sun; fruit without seeds or cores; flesh firm and juicy; in eating from October till July. Tree small; a great bearer.

108. Pomme Grise.—An American apple, introduced from Canada about 1760. Fruit middle-sized, flattish, of a russet color where shaded, beautiful red striped towards the sun; is an excellent fruit, ripens late, and keeps till March.

109. Pomme de deux Anis, *Apple of two Seasons.*—Blossoms and fruits at the same time (thence the name). Fruit small, roundish, pale green; flesh soft and sweet; in eating from September till January. Tree small; good bearer.

110. Pomme Violette, *The Violet Apple.*—Fruit large, pale green, striped with red towards the sun; flesh juicy, sugary, partaking somewhat of the flavor of violets (from thence the name). Is in eating from October till February or March. Is of French origin. Tree handsome, middle-sized, indifferent bearer.

111. Poor Man's Profit.—Fruit below the middle size, oval, dingy colored; propagates by cuttings readily; keeps till January. Tree hardy; very prolific.

112. Grey Leadington.—Fruit long, color when ripe yellowish green, hollow within, and when ripe the seeds make a rattling noise within, when shaken; good bearer, and tree extremely hardy; is in eating from November till January.

113. Quince Apple.—Fruit middle-sized, resembling a quince (from thence the name), yellow, rather red towards the eye; flesh firm, pleasant sharp flavor; is in eating from January till April. Tree middle-sized, and a good bearer.

114. **Royal George.**—Fruit large, oval, yellow and green; flesh firm and sugary; beautiful fruit; keeps well; is in eating from January till June. Tree handsome, and a great bearer.

115. **Red Bay.**—An esteemed Herefordshire fruit. Fruit large, oblong, whitish where shaded, streaked with red next the sun; beautiful; flesh firm and juicy; keeps from October till March. Tree handsome, and great bearer.

116. **Ribston.**—(See *Pippin, Ribston.*)

117. **Syke-house.**—A Yorkshire apple, from Syke-house in Yorkshire. Fruit middle-sized, orange towards the sun and sometimes inclining to red, yellow when much shaded; flesh firm and juicy; keeps till April. Tree large and spreading, a great bearer.

118. **Spice Apple.**—Fruit middle-sized, angular, yellow; flesh firm and sugary; in eating from January till March. Tree middle-sized; great bearer.

119. **Skerm's Kernel.**—Fruit middle-sized, beautifully streaked with red, deepest towards the eye, and a good deal of yellow towards the foot-stalk; conical; flesh firm and aromatic; keeps from July till April. Tree large and much spreading; good bearer.

120. **Spanish Onion.**—Fruit rather below the middle size, round, russet where shaded, dull red towards the sun; flesh firm and sweet, an excellent fruit; keeps from October till March. Tree hardy, spreading, and a good bearer.

121. **Transparent Apple.**—Introduced from Russia. Is rather curious; is showy upon the table, but not good flavored.

122. **Ward.**—Fruit under the middle size, flattish, fine red and yellow-green; flesh firm and juicy; is in eating from January till July; a valuable apple, Tree slender, twiggy, and a good bearer.

123. **Wheeler's Extreme.**—An English seedling. Fruit under the middle size, flattish, russet in the shade, streaked with red towards the sun; flesh crisp and sugary; in eating from December till April, or later. Tree hardy, and a great bearer.

124. **White Must.**—An esteemed Herefordshire fruit. Fruit middle-sized, greenish yellow, but red towards the sun; flavor rather tart, but agreeable; is in eating from January till April.

125. **Petit Jean Apple.**—Introduced from Jersey, (where it appears to have been long cultivated and admired,) by General Le Couteur. Fruit oval, slightly flattened at both ends, eye small, placed in a confined cavity; stalk short and deeply inserted; color pale yellow where shaded, of a bright red where exposed to the sun; flesh very white, extremely tender, with a mild and agreeable juice; keeps till the end of the season.

CULINARY OR KITCHEN APPLES.

126. **Pippin, Holland.**—Middle-sized, flattish, of a yellow and green color; ripens in October, and keeps till April; is a good bearer, and free growing tree.

127. **Pippin, London,** *Five-crowned Pippin.*—Size large, of a round and rather flattened form; color green, striped with red; ripens in November, and keeps till April; a handsome spreading tree, and great bearer.

128. **Pippin, Pound.**—Fruit large, conical; color greenish yellow; ripens in January, and keeps till April. Tree vigorous, with large leaves, a rather indifferent bearer.

129. Pippin, Kerry.—Of Irish origin. Middle-sized fruit, roundish; color greenish yellow; ripens in October, and keeps till February; described in the Mem. of the Caledonian Hort. Soc. as a valuable fruit for kitchen purposes.

130. Pippin, Hollow-eyed.—Fruit middle-sized, eye deep, and oval; color yellow streaked with red; ripens in October, and keeps till June. Tree hardy, and a good bearer.

131. Pippin, Spencer.—Fruit middle-sized, oblong; color yellowish green; ripens in December, and keeps till June. Tree hardy, and a free grower; good bearer.

132. Pippin, Broad-eyed.—Fruit large, flat, having a broad eye; color greenish yellow; ripens in October, and keeps till May. Tree large and free grower; good bearer.

133. Pippin, Bland's Summer.—Fruit middle-sized, oval-shaped; color gold and green; ripens in September, and keeps till January. Tree hardy, and a good bearer.

134. Pippin, William's.—Originated about 1800. Fruit large for a pippin; merits not sufficiently known.

135. Pippin, Lucas.—Fruit middle-sized, cylindrical; color orange; very showy; ripens in October, and keeps till May. Tree a good bearer, and of a handsome spreading form.

136. Pippin, Carberry.—Fruit large, oval; color deep green and red; ripens in October, and keeps till March. Tree hardy, of a spreading habit; great bearer.

137. Pippin, Russet. *Grey Pippin, Brown Pippin.*—Fruit middle-sized, roundish; color gold and russet; ripens in October, and keeps till March. Tree hardy and upright; good bearer.

138. Pippin, Grumas.—Fruit small, roundish; color yellow and green; ripens in January, and keeps till April. Tree a good bearer, but rather delicate.

139. Pippin, Carcey.—Fruit below the middle size; form conical; color green, yellow, and red; ripens in November, and keeps till May. Tree free grower, and a good bearer.

140. Pippin, Isle of Wight.—Fruit middle-sized, roundish; color greenish yellow; ripens in October, and keeps till March. Tree hardy, and a good bearer.

141. Pippin, Griddleton, or Gridleston.—Fruit large, angular; color green; ripens in October, and keeps till March. Tree of vigorous growth; a good bearer.

142. Pippin, Pearson's. *Nottingham Apple.*—Originated about 1780. Fruit small, roundish; color yellow and gold; ripens in December, and keeps till April, but becomes dry and mealy in March. Tree a good bearer, and of a free upright habit.

143. Pippin, Warwickshire. *Warwick Golden Pippin.*—Fruit small, round; color gold and green, much resembling the golden pippin; ripens in November, and keeps till March. Tree delicate, slender-twigged, a good bearer; the fruit fit either for the table, kitchen, or cider.

144. Pearmain, Royal.—Fruit large, roundish: color red and yellowish green; ripens in November, and keeps till June. Tree middle-sized, free grower, and a great bearer.

145. Pearmain, Herefordshire.—Fruit large, round; color pale green and spotted; ripens in October, and keeps till April. Tree hardy, grows to a large size; good bearer.

146. Pearmain, Winter.—Often known by the same name as the last; originated in Herefordshire. Fruit middle-sized, oval; color green and red; ripens in September, and keeps till May; a much-esteemed fruit. Tree large, and a great bearer.

147. Pearmain, Cornish.—Fruit middle-sized, rather long; color dull green on one side, and russet on the other; ripens in December, and keeps till April.

148. Pearmain, Bell's.—Fruit middle-sized, oblong; color dull green and russet; ripens in October, and keeps till May. Tree handsome and free grower; a great bearer.

149. Pearmain, Red.—Fruit small, oval; color deep red and yellow; ripens in October, and keeps till April; fruit excellent. Tree handsome, and great bearer.

150. Pearmain, Baxter's.—Fruit large, oblong; color green and red; ripens in October, and keeps till June. Tree handsome, and a good bearer.

151. Pearmain, Pickering's.—Fruit small, oval; color green, striped with red; ripens in October, and keeps till March. Tree hardy, and a good bearer.

152. Rennet, Kitchen.—An esteemed Lincolnshire apple. Fruit large, oval; color greenish red. Tree hardy, with slender twigs; a great bearer.

153. Rennet, Lincolnshire.—Another esteemed fruit of the same county. Fruit large, obtusely conical; color brownish green; ripens in December, and keeps till July. Tree vigorous, with large leaves; a great bearer.

154. Rennet, Lord Camden's.—Fruit large, of a flattened oval form; color russet and red; ripens in October, and keeps till April; a much-esteemed fruit. Tree handsome, and pretty good bearer.

155. Rennet, Monstrous.—Fruit very large, oblong; color red and dark green.

156. Rennet, English.—Fruit middle size, oval; color yellowish green; ripens in October, and keeps till March. Tree free grower, and good bearer.

157. Rennet, Trevoider.—Fruit small, round; color yellow and red; ripens in December, and keeps till May. Tree very hardy.

158. Rennet, Mother.—Fruit middle-sized, round; color yellow and brown; ripens in November, and keeps till March; an esteemed fruit. Tree hardy, and a good bearer.

159. Rennet, Spice.—Fruit small, round; color green and red; ripens in October, and keeps till March.

160. Rennet, French. *White Rennet.*—Fruit large and roundish; color pale yellow, beautifully striped with red when exposed to the sun; ripens in October, and keeps till February, and sometimes till March. Tree delicate, but a good bearer; better suited for an espalier than a standard in most situations, but not sufficiently valuable for a wall.

161. Rennet, Canadian.—Fruit large, oval; color pale green; ripens in November, and keeps till February. Tree hardy, and vigorous in growth.

162. Rennet, Dwarf. *Grey Rennet.*—Fruit middle size, round; color grey, or greyish white; ripens in November, and keeps till March.

163. Russet, Acklam's.—A Yorkshire apple. Fruit middle-sized; color russet next the sun, and yellow on the shaded side; ripens in January, and keeps till March.

164. Russet, Golden.—Fruit middle size, round; color yellow russet; ripens in October, and keeps till May. Tree hardy and spreading; a good bearer.

165. Russet, Sharp's.—Fruit below the middle size; form approaching to the frustum of a cone; color brown and red streaked; ripens in October, and keeps till May. Tree upright while young, spreading when old; a good bearer.

166. Russet, Wheeler's.—Fruit middle-sized, roundish; color brown russet; ripens in November, and keeps till April; a good fruit. Tree upright, twigs slender, a good bearer.

167. Russet, Cornish.—Fruit below the middle size, flat and roundish; color russet and somewhat green, particularly where shaded; ripens in January, and keeps till June; a valuable fruit. Tree growing rather upright; a good bearer

168. **Russet, Dredge's.**—Fruit below the middle size; color greenish russet; ripens in November, and keeps till July.

169. **Russet, Wine.**—Fruit middle size, conical; color dark russet; ripens in December, and keeps till May; a good fruit. Tree upright and slender; a good bearer.

170. **Russet, Adams'.**—A Yorkshire apple. Fruit small, round; color russet and yellow; ripens in January, and keeps till March. Tree vigorous and spreading; a good bearer.

171. **Russet, Great.**—Fruit large, roundish; color russet, streaked with red; ripens in December; keeps till March. Tree hardy, and a good bearer.

172. **Russet, Caraway.**—Fruit small, roundish; color russet and yellow; ripens in January, and keeps till May. Tree hardy, but with slender twigs; an indifferent bearer.

173. **Russet, Pile's.**—Fruit middle-sized, round and flat; ripens in December, and keeps till May; a much-esteemed fruit. Tree hardy, and a great bearer.

174. **Russet, Harvey's.**—Fruit large, oval; color green russet; ripens in December, and keeps till May. Tree upright in growth, and a great bearer.

175. **Codling, French.**—Fruit large, conical, and ribbed; color yellowish green; ripens in August, and keeps till January. Tree hardy; a great bearer; and is readily propagated by cuttings.

176. **Codling, Keswick,** *Carlisle Codling.*—Fruit small, but when a thin crop about the middle size, ribbed and conical; color light green and white; ripens in July, and will keep till the beginning of December. Tree very hardy, and capable of being propagated by cuttings; probably the most prolific apple we have. The fruit is used when very young, as well as when ripe.

177. **Codling, Hawthorn Dean,** *White Apple of Hawthorn Dean.*—Is said to have been introduced by, or originated with, the celebrated Drummond, of Hawthorn Dean, and takes the name of that romantic retreat on the river Esk, near Roslin, in the neighbourhood of Edinburgh. Fruit large; color pale green, white where shaded, and beautifully striped with delicate red where exposed to the sun; ripens in August, and will keep till January; but is apt to become shrivelled by the end of that month. Tree hardy, and, next to the last, the greatest bearer we have. It is a great acquisition to the market-gardeners and fruit-growers. It is a hardy free grower, and not liable to diseases. It begins, like the last, to bear the second year after planting. Were they both better keepers, they might be termed the most useful apples we have. It thrives in any situation, and will do better in a north aspect than any other apple yet known. In the gardens of cottagers and artizans, both these apples should find a place.

178. **Codling, Stoup.**—Fruit large, oblong, and ribbed; color pale green and red; ripens in October, and keeps till May; a valuable fruit. Tree of great size, hardy, and a great bearer.

179. **Codling, Royal.**—Fruit very large, conical, and ribbed; color whitish yellow; ripens in September, but does not keep long. Tree a free grower, and a good bearer.

180. **Codling, Kentish,** *Burknott Codling.*—Fruit below the middle size, conical; color pale green; ripens in August, and keeps till January. Tree vigorous grower, and a great bearer

181. **Bigg's None-such.**—Originated about 1750. Fruit middle size, conical; color yellow variegated with red; ripens in September, and keeps till January. Tree free grower, and good bearer.

182. **Eve-Apple.**—Of Irish origin. Fruit small, round; color red and green; ripens in October, and keeps till July. Tree hardy; capable of being propagated by cuttings.

183. **Yorkshire Greening.**—Supposed to be originally from Yorkshire. Fruit above the middle size, conical; color dull red and green; ripens in January, and will keep till August, and sometimes longer. It is one of our most valuable kitchen apples, and succeeds well in almost all situations. Tree large and spreading, and is a very great bearer.

184. **Bovey Red-streak.**—Fruit middle-sized, rather flattish; color deep red and white; ripens in January, and keeps till April; is altogether a good fruit. Tree hardy, and a good bearer.

185. **Longleat Red-streak.**—Originated in Wiltshire about 1785. Fruit middle-sized, round; color yellow streaked with red; ripens in September, and keeps only till October. Tree a free grower, and a great bearer.

186. **Nine-square.**—Supposed to have originated in Gloucestershire, where it is still much admired. Fruit large, angular; color red and yellow; ripens in October, and keeps till April. Tree hardy, and a good bearer.

187. **Minier's Dumpling.**—Originated about 1765. Fruit rather above the middle size, round, and flattened; color deep gold and red; ripens in December, and keeps till April. Tree middle-sized, and a good bearer.

188. **Pomroy.**—Fruit large, flattish; color red and green; very showy; ripens in January, and keeps till March. Tree large, and a good bearer.

189. **Red Sweet.**—A Cornwall fruit. Fruit small, oval; color red and green yellow; ripens in November, and keeps till March. Tree of vigorous growth, and a middling bearer.

190. **Norfolk Colman.**—Fruit middle size, conical; color mahogany and dark green; ripens in December, and will keep till August.

191. **Norfolk Beaufin.**—Fruit above the middle size, round and flattened; color deep red on the exposed side, pale green where shaded; in use from December till August. This is one of our most valuable kitchen apples, and possesses the properties of being a great bearer, excellent keeper, and good baker or boiler. Is much esteemed in Norfolk, and is there dressed in a peculiar manner. Tree sufficiently hardy to stand in any part of the kingdom, and not subject to diseases. Of all our keeping apples, none better merits a place in small gardens than this.

192. **Aromatic.**—Fruit middle-sized, oval; color yellow and red; in use from December till May; an esteemed apple. Tree rather slender, and only a middling bearer.

193. **Cat's Head.**—An esteemed Scotch fruit. Large, oblong; color grey, yellow generally; but, when fully exposed to the sun, of a reddish cast; ripens in January, and keeps till May. Tree vigorous, grows to a great size, and is an abundant bearer.

194. **Baltimore.**—Of American origin. Fruit very large, often fourteen or fifteen inches in circumference, and has been known to weigh above one pound and a half; color fine red and green; a magnificent fruit, but, like most American apples, an indifferent bearer in this country; with us the climate is not suitable to bring them to perfection. To use the words of a valued correspondent, it would be better not to plant any of the trees, and import the fruit. This observation may be iustly applied to nine-tenths of the apples and pears, in particular, lately introduced: a few of them may be planted; but where the supply of a family or the market is an object, they cannot be depended upon; one-half of them will not bear fruit in this climate, and the other half will only be eatable one season in five.

195. **Cockagee.**—Fruit middle-sized; colour red and yellow; ripens in October, and will only keep till the middle or end of December. Tree of vigorous growth, and a great bearer.

196. DREDGE'S BEAUTY OF WILTS; *Red Anise.*—Originated in Wiltshire about 1750. Fruit above the middle size, oval; color bright yellow, spotted with red; in use from October till March. One of the best apples yet known, in point of general utility. Tree hardy, and a great bearer.

197. DUMPLING.—An old Norfolk fruit. Above the middle size, flattish, round; color greenish streaked with red, often much so; keeps till March. Tree hardy, and a good bearer. (Not the dumpling apple of the Americans.)

198. HAMPSHIRE NONE-SUCH.—Fruit large and conical; color green yellow, streaked with red; in use from September till December; a valuable fruit. Tree vigorous, and succeeds better upon chalky bottoms than most other apples; is a great bearer.

199. FRENCH CRAB.—Fruit large, oval; color deep green and red; will keep from one season to another; a valuable fruit, and should have a place in every garden. Tree of a handsome upright habit, and a great bearer.

200. PIGEONETTE.—Originally from Brittany. Fruit below the middle size, conical; color pale red, and showy; ripens in October, and keeps till March. Tree hardy, with slender twigs; rather an indifferent bearer.

201. GOLDEN MUNDI.—Fruit small, round; color green and red; ripens in October, and keeps till January. Tree spreading, of no great height, and a good bearer.

202. HEDGE.—Fruit middle size, conical; color red and straw; in use from October till April. Tree upright in habit, and a good bearer.

203. GOLDEN GLOUCESTER.—Fruit middle-sized, oval; color gold and red; in use from December till March. Tree hardy, of spreading habit; a good bearer.

204. POMME GRISE.—Originally from Canada, about 1790. Fruit middle-sized, oval; color russet and red; ripens in September, and keeps till January. Tree of vigorous growth; like other American apples, with us an indifferent bearer.

205. NONE-SUCH.—An esteemed Scotch fruit. Often there planted against walls (where it becomes an excellent table apple); upon standards middle-sized, roundish; color grass-green, where shaded russet brown, often reddish where exposed to the sun; in use in September and October, when kept longer, becomes acid and shrivelled. Tree of slender habits, often having the extremities of the shoots unripened; in such cases liable to canker; is a good bearer. It is said to afford a much less portion of sauce than most other apples.

206. HALLINGBURY.—Fruit large, flat, and much ribbed; color red and yellow; ripens in October, and keeps till March. Tree of vigorous growth, and but an indifferent bearer.

207. HUBBARD'S RUSSET PEARMAIN.—Fruit above the middle size, roundish; color dark russet; ripens in January, and keeps till April. Tree of upright habit, slender twigged, a middling bearer.

208. LONG LASTER.—Fruit middle-sized, conical, rather angled; color fine yellow and red; ripens in October, and keeps till May.

209. MAJOR HEMMING.—Fruit middle-sized, round; color light green and brown; ripens in November, and keeps till March.

210. KIRK'S SEEDLING.—Originated with Mr. Joseph Kirk, of the Brompton Nursery, a well-known fruit-tree grower. Fruit large, round; color red and yellow; ripens in December, and keeps till May. Tree of vigorous growth, and a great bearer.

211. KENTISH FILL-BASKET. *Kentish Codling.*—Fruit large, conical; color pale green; ripens in August, and lasts till October. Tree a middling bearer.

212. **Minshul Crab.**—Originally from Lancashire. Fruit middle size, roundish; color yellow, with brown spots; ripens in September, and keeps till April. Tree vigorous grower, a great bearer, and valuable fruit.

213. **May Gennet.**—Fruit below the middle size, conical; color green-yellow striped with red; ripens in October, and keeps till April.

214. **Dymmock Red.**—Fruit below the middle size, round; color red and yellow; ripens in January, and keeps till April. Tree hardy, of spreading habits, and a good bearer.

215. **Dutch Queening.**—Fruit large, oblong; color red and green; ripens in January, and keeps till March. Tree hardy, of spreading habit, and a great bearer.

216. **Kernel, Redstreak.**—Fruit middle size, conical; color red and yellow; ripens in December, and keeps till April. Tree handsome, forms leaves unusually broad; a great bearer.

217. **Embroidered.**—Fruit above the middle size, oval; with broad streaks of red; ripens in October, and keeps till February. Tree vigorous, with broad leaves; a good bearer.

218. **John.**—A Devonshire and Herefordshire fruit, of middle size, and much esteemed both for cider, kitchen, and table.

219. **French Spaniard.**—Fruit middle size. Tree indifferent bearer.

220. **Everlasting.**—Fruit below the middle size, conical; streaked with green and red; ripens in October, and keeps till February. Tree hardy, twigs slender, and a good bearer.

221. **Green Dragon.**—Originated at Enmore Castle, about 1780. Fruit large, of an hexagonal prism form; color green and red; ripens in September, and keeps till February. Tree vigorous, with rather broad leaves, rather an indifferent bearer.

222. **Herefordshire Red-streak.**—Much cultivated in Herefordshire and the adjoining counties. Fruit middle-sized, oblong; color green streaked with red; ripens in January, and keeps till April. Tree vigorous, and a good bearer.

223. **Winter Box.**—Fruit middle-sized, conical, rough; color light green; ripens in December, and keeps till February. Tree hardy, twigs slender; a good bearer.

224. **White Must.**—Another Herefordshire fruit of middling size, flattish; color greenish yellow with red; ripens in January, and keeps till June. Tree hardy, of spreading habit; a good bearer.

225. **Long Seam.**—Fruit large, angular; color light green; ripens in November, and keeps till February. Tree hardy; a good bearer.

226. **Old Red Must.**—A Herefordshire fruit long in cultivation. Fruit large, oval; color pale red and green; ripens in January, and keeps till August. Tree hardy, with broad leaves; great bearer.

227. **Winter Pomroy.**—Fruit large, conical; color dark green striped with red; ripens in October, and keeps till January. Tree hardy, upright, with broad leaves; a good bearer.

228. **Lord Cheney's.**—Originated about 1760, much resembling the Yorkshire Greening. Fruit middle-sized, conical; color dark green and chocolate; ripens in December, and keeps till June. Tree hardy, free grower, leaves small; a good bearer.

229. **Lord Arundel.**—Of French origin. Fruit large, angular; color green and dingy red; ripens in December, and keeps till May. Tree having small leaves, of elegant outline; rather an indifferent bearer.

230. Tankerton.—Fruit large, conical; color yellow, with a little red, particularly where exposed; ripens in December, and keeps till February; a valuable kitchen apple. Tree large, and a good bearer.

231. Maiden's Blush.—Fruit large, angular; color green and dingy red; ripens in December, and keeps till May. Tree having small leaves, of elegant form, but a very indifferent bearer.

232. Transparent Crab.—A Russian apple, often known by the name of the Moscow Apple. Fruit rather small, round; color transparent red; in use in September and October. Tree very small; a great bearer. The fruit much used for preserving.

233. Spaniard.—Much cultivated in Cornwall, and said to have been originally brought from Spain. Fruit above the middle size, oblong; color greenish yellow; ripens in December, and keeps till April. Tree delicate with us, and an indifferent bearer. Should only be planted in very favorable situations; does not succeed in the north of England.

234. Pawsan.—Fruit below the middle size, conical; color greenish yellow; ripens in December, and keeps till May. Tree vigorous, with broad leaves; a good bearer.

235. Mansfield.—A Nottingham and Yorkshire apple. Fruit large, oblong; color green and bright red, with dark spots; ripens in December, and keeps till February. Much esteemed as a cider apple. Tree hardy, spreading, and a great bearer.

236. Norfolk Paradise.—An apple much esteemed in Norfolk. Fruit large, round; color pale red and green; ripens in December, and keeps till February. Tree hardy, with broad leaves; a great bearer.

237. Gloucestershire Queening.—Fruit large, very irregularly ridged; color dark red; ripens in October, and keeps till April. Tree vigorous and spreading; a great bearer.

238. New Red Must.—Fruit large, round; color pale red and green; ripens in December, and keeps till February. Tree hardy, and a good bearer.

239. Dredge's Seedling.—Fruit large; color yellowish green striped with red, particularly on the exposed side; ripens in November, and keeps till January.

240. Black Apple.—Fruit middle-sized; of a dark mahogany color next the sun, but much lighter on the opposite side; ripens in November, and keeps till April.

241. Boomrey.—Fruit above the middle size, flattish; color deep red externally, internally streaked with red also; keeps till April; a good kitchen or cider apple, but not good for eating raw.

242. Carnation Apple.—Fruit middle-sized; beautifully striped with red; ripens in January, and keeps till May.

243. July-flower.—Fruit middle-sized; color yellowish green; and beautifully striped with red towards the sun; ripens in December, and keeps till March.

244. Hagloe Crab.—Fruit below the middle size, conical shaped; color yellowish; is ripe in January; fit either for baking or cider.

245. Pomme Violette, *Violet Apple.*—Fruit above the middle size; color pale green, striped with red towards the sun; has much the smell of violets, from thence the name; ripens in October, and keeps till February, or later.

246. Quince Apple.—Fruit middle-sized; color yellow, a little red towards the eye; ripens in January, and lasts till April.

247. Reg Bay.—An esteemed Herefordshire apple. Fruit large; beautifully streaked all over with red; shape longish; in use about the end of October.

248. **Seek no Farther.**—Fruit above the middle size; color pale green, a little streaked with red; comes into use in January, and lasts till May, but becomes mealy by the beginning of April.

249. **Ward Apple.**—Fruit rather below the middle size; flat shaped; color fine red towards the eye; of a yellowish green towards the footstalk; keeps till June.

250. **Wheeler's Extreme.**—Resembles the Pomme Grise. Fruit below the middle size; flat shaped; color beautifully clouded with red on a yellowish russet ground; keeps till April.

PEARS,

ARRANGED AS DESSERT AND CULINARY FRUITS.

Pear, *Pyrus communis* of *Linnæus*,—belongs to the class *Icosandria*, and order *Pentagynia*, and is arranged in the natural order *Rosaceæ*. Is a native of Britain, as well as of many parts of Europe as far north as latitude 61°.

The cultivated pear differs from the apple, not only in its character, or habit of growth, but also in being more apt to send up suckers from the roots; in sending out tap-roots; in being much longer in coming into fruit from seed; and also being either grafted, or upon its own roots, much longer lived. It is well known to live for several centuries; and is, probably, of all our fruit-trees, excepting the chesnut, the longest liver. It is much harder and less nice of its situation of growth than the apple, and will grow in almost all soils and situations. Knight observes, that the identical trees that supplied the inhabitants of Herefordshire with perry in the seventeenth century, are like also to supply those of the nineteenth. As an ornamental tree, it is much superior to the apple; some sorts, the *Barland* and *Olfield* for example, form extremely handsome outlines of form, and when planted in the orchards, among apples, take off, in a great measure, that stiff formal appearance which the apple generally assumes. At what time the cultivated pear attracted the notice of the inhabitants of this country is not certainly known, but, as we have observed of the apple, was probably known or used in its wild state by the Britons before the Roman invasion; after that epoch, we are to suppose that they became acquainted with this fruit by its introduction by these people. The pear ranks next to the apple in point of usefulness, as it is not only used in various ways as a culinary fruit, but the expressed juice is made into the well-known liquor, perry, which is an article of commerce in several counties of England. That of the two sorts of trees mentioned above, if well manufactured, fetches the high price of ten and fifteen pounds per hogshead, upon the spot where it is made. The French prepare a perry which is little inferior to wine. They also dry the bad-eating sorts of pears, which they keep for several years. With them the varieties of pears are greater than that of apples. With us the varieties are also extremely numerous, and our catalogues are daily increasing, at least in names. Parkinson enumerates 64 sorts of pears. Miller has selected 80 sorts, and described them. The catalogues of one of the Paris nurseries contain 189 select sorts. Our London nurseries' catalogues name from to 200 to 300 sorts; and the Horticultural Society's Catalogue, lately published, contains 622 sorts. Flemish pears have long been considered superior to ours, and when brought into use, will give quite a new feature to the dessert.

Many sorts of them are in a thriving state in the garden of the Horticultural Society, and will probably be described at a future period by that society; till such time, we must content ourselves with such sorts as are already described, or which are so well known as to deserve cultivation.

The largest collection of pears in the world, is that of Van Mons, at Brussels; who has established a fruit-tree nursery, in which are grown upwards of eight hundred new varieties of pears, raised by himself and Mr. Duquesne, of Mons, besides new varieties of other hardy fruit-trees.

DESSERT PEARS.

Summer Fruit, arranged in the Order of their Ripening.

1. Citron des Carmes, or *Magdalen*.—Ripens in July; rather a round fruit, tapering towards the stalk; very juicy; should be eaten off the tree; keeps only a few days; of a yellowish green color; middle size; much improved both in flavor and earliness, if planted upon a wall. One tree is sufficient for a large garden; and for smaller gardens, one or two grafts will be plenty, introduced upon another tree.

2. Little Musk, or *Supreme*.—Ripens about the end of July, or beginning of August; fruit yellow when ripe; juice somewhat musky; should be gathered before it is too ripe; keeps only a few days, and should be eaten off the tree; is a good bearer. One tree is sufficient for a large garden; for smaller gardens, one or two grafts will be plenty, introduced upon some other tree.

3. Chio, or *Little Bastard Musk*.—Ripens about the same time with the last; is smaller; of a yellow color when ripe, having a few streaks of red on the side next the sun; is juicy and melting; keeps only a few days, and should be eaten soon after gathering.

4. Early Carnock.—Of a yellow color, red towards the sun; rather an indifferent pear, fitted for standards only.

5. Pear, James'.—A Scotch fruit, as well as the last; is the earliest native pear of that country; has little flavor, and keeps only a few days; is a good bearer. The above five pears may with propriety be wrought upon the same tree, and will afford sufficient quantity for most families.

6. Green Chissel, or *Hastings*.—Ripens about the beginning of August; is a good bearer; is middle-sized, and the fruit remains always green; it grows closely to the branch, and often in long clusters; is much grown in many parts of Hampshire and Sussex.

7. Little Muscat.—A very small fruit, having a very thin skin; color yellowish when ripe; flavor rich musky, and only keeps a few days.

8. Red Muscadelle.—Fruit large and beautiful; the color yellow, striped with red; flavor rich. It sometimes produces two crops in a year, the first about the end of July, and the second in September.

9. Green Pinky.—Fruit small and nearly round; of good flavor; originated at Pinky, near Edinburgh; is much esteemed in Scotland; great bearer, and a healthy tree.

10. Lemon, *Lady's Lemon*, or *Lady Lamont*.—An excellent bearer. Fruit not much esteemed, unless for its earliness.

11. Pear Sauch.—A Clydesdale pear. The fruit large and beautiful; the tree healthy, and a great bearer; is an excellent market pear.

12. Ferrow Cow.—Another Clydesdale fruit. Large, flattened towards the eye of the fruit, with a short foot-stalk; a great bearer, and beautiful fruit; color red and yellow; flesh tender and musky; tree hardy, and of a pendulous habit.

13. **Grey Honey.**—Fruit pretty good; ripens in August.

14. **Green Orange**, or *Orange Vert.*—A middling good early fruit; ripens in August.

15. **Pope's Pear.**—An early pear of no great merits; ripens in August.

16. **Golden Knap.**—A much better fruit than either of the three last; ripens in August.

17. **Jargonelle**, *Cuisse Madame.*—A French fruit; ripens in August. Fruit large; skin smooth; color pale green; a good bearer, and good flavor. Tree healthy and vigorous, somewhat like the Windsor, and does best on standards in England; but is worth an east or west wall in Scotland, or in any late situation. There are some very old trees of this sort in many parts of the kingdom which must have been early introduced.

18. **Lady's Thigh.**—This is the true *Jargonelle*, and the *Cuisse Madame* of the French. Has been early introduced into this country. Color russet-green and iron; ripens from the middle of August to the beginning of September; flavor rich and musky; an indifferent bearer. Tree vigorous, and in character resembles the Jargonelle and Windsor. These two trees have hitherto been confounded together; it is supposed that the names have been changed in coming to this country by accident.

19. **Windsor.**—An English pear. Skin smooth; color when ripe of a yellowish green; the flesh soft, and if permitted to hang two or three days after it is ripe grows mealy and useless; ripens in August; is an indifferent bearer.

20. **Orange Musk.**—Ripens about the end of August; the flesh is musky, but dry; color yellow, spotted with black.

21. **Great Blanquet**, or *Bagpipe of Anjou.*—Ripens about the middle of August; skin smooth, of a pale green color; flesh soft, and full of juice; flavor rich; and rather a good bearer.

22. **Little Blanquet.**—Much smaller than the last; color pale; flesh tender, and full of rich musky juice; ripens about the end of August.

23. **Long-stalked Blanquet.**—Ripens latter end of August; skin smooth; color white, a little tinged towards the sun; juice rich and sugary.

24. **Early Achan.**—A pear much inferior to the winter pear of that name; ripens in August; should be eaten off the tree.

25. **Crawford**, or *Lammas.*—Ripens about the end of August; an esteemed Scotch fruit; should be eaten a few days after gathering; color green, rather tinged with iron towards the sun; great bearer, and of a juicy good flavour, if not too ripe; keeps only ten or fifteen days. Tree vigorous, and grows in almost any situation; middle-sized fruit, improved if on a wall.

26. **Skinless**, or *Early Russet.*—Ripens the latter end of August; skin extremely *thin* (from thence the name); color reddish; flesh melting, and full of rich sugary juice.

27. **Queen's Pear**, or *Musk Robert*, or *Amber Pear.*—Ripens the latter end of August; fruit small; color yellow when ripe; juice rich and musky; great bearer.

28. **Musk Drone.**—Ripens the end of August or beginning of September; color yellow when ripe; flavor rich and musky; should be eaten off the tree; is apt to get dry and mealy when over ripe; keeps only a few days. Is a great bearer.

29. **Red Orange.**—Ripens about the beginning of August; color greenish, but when ripe, the side next the sun becomes tinged with purple; flesh melting, and juice sugary, with a little perfume.

30. **Hanging Leaf.**—An esteemed Clydesdale fruit. Fruit almost round; color beautiful red and yellow; of a delicious sweetness. Tree hardy, and well adapted for the orchard.

31. **Scotch Bergamot.**—Fruit large; color yellow and red; flesh tender and juicy.

32. **Musked Bonchretien,** *Gratioli, Cucumber,* or *Spinola's Pear.*—Color red on one side and white on the other; pulp rather tender; juice a good deal perfumed. A great bearer, and excellent fruit.

33. **Elton.**—A seedling, growing at Elton. Recommended by Mr. Knight. Middle-sized fruit, oval, and rather flattened at the ends; color red and yellowish; ripe from the end of September till the middle of October. A great bearer, and forms an excellent standard tree. The fruit is always without seeds, and almost always without internal cavity. If trained to a wall it becomes very large; but is then good for nothing. As a standard, it grows and bears well. The original tree stands upon its own roots, in an orchard of seedling pear-trees, in the parish of Elton, in Herefordshire. Mr. Knight has ascertained its age to be about 140 years, and describes it too as still indicating youth and vigour; and calculates that, if not destroyed by accident, will live for three centuries, as he thinks it has hardly yet attained its middle age. This pear has been recommended by the Hort. Soc. as deserving general cultivation. It comes early into fruit, and combines nearly all the fine flavor of the Bergamots, with much of the melting softness of the Beurré.

34. **Saffron.**—Well-shaped fruit, rather large; tree hardy, and rather a good bearer.

AUTUMN PEARS.

Arranged in their Order of Ripening.

35. **Cassolette,** or *Green Muscat.*—Ripens the latter end of September. Fruit rather small; color greenish, with dark specks; juice richly perfumed; an esteemed fruit. Tree rather delicate.

36. **Avorat,** or *August Muscat.*—Ripens the beginning of September. Skin smooth; color whitish yellow; juice rich, sugary, and perfumed; and is esteemed one of the best summer pears yet known. Is a great bearer.

37. **Tillington Pear.**—Originated at a village of that name, near Hereford, from a seed of the autumn Bergamot, impregnated with the pollen of the Jargonelle. It is of the shape and size of the *Doyenne gris,* but more perfectly rounded at the head. Stalk short, with a disposition to fleshiness at its insertion. The skin is dull green on the shaded side, with a dull brick-dust red where exposed: the whole a good deal russeted. Flesh white, with a little grit at the core; particularly sweet and rich, though not juicy. Ripens in the middle of November, but remains a considerable time without spoiling.

38. **Great Onion.**—*Brown Admiral,* or *King of Summer.*—Ripens about the beginning of September. Color brownish next the sun; a middling bearer; tree hardy.

39. **Orange Musk.**—Ripens with the last. Skin green; flesh melting and juicy.

40. **Poire du Pouchet,**—Ripens with the last. Flesh soft and tender; juice sugary.

41. **Rose,** *Thorny Rose.*—Ripens with the last. Shape resembling the King of Summer, but much larger; color yellowish green, rather inclining to red towards the sun; juice musky.

42. **Perfumed.**—Ripens with the last. Color deep red, spotted with brown; flesh melting, but dry; flavor rather perfumed.

43. **Salviati.**—Ripens about the middle of September. Color red and yellow next the sun, white where shaded; flesh tender; juice sugary and perfumed.

44. **White Beurré.**—Ripens about the beginning of September; keeps only a few days; a fine table pear.

45. **Rose-Water.**—Ripens about the latter end of September. Color brown, skin rough; juice very sweet, tasting like rose-water.

46. **Russelet.**—Ripens with the last. Flesh soft and tender; juice agreeably perfumed.

47. **Keather.**—A Clydesdale fruit. Color green; shape oblong. Hardy tree; fit for orchards.

48. **Elsine,** (*Awl*) *halft.* or *Goodman.*—A Scotch fruit. Size small, long, and flat at one end; color green and yellow; flavor sweet, dry, and hard. A great bearer.

49. **French Carnock.**—A fruit of middling qualities.

50. **Drummond,** or *Late Scotch Carnock.*—Color bright red and yellow. Should be eaten off the tree; is apt to get dry and mealy if kept many days.

51. **Vicar.**—Shape oblong; color yellow, red, and striped; flesh tender; flavor sweet and musky; rather dry in eating, particularly if too ripe.

52. **Royal Orange Bergamot.**—Color yellow, sometimes striped or tinged with red.

53. **Great Mouth-water.**—Ripens about the end of September. Flesh melting, and full of juice. Tolerable bearer.

54. **Prince's Pear.**—Ripens with the last. Juice very high flavored. Is a great bearer.

55. **Summer Bergamot.**—Ripens with the last. Often called *Hamden's Bergamot.* Flesh melting, highly perfumed. Good bearer.

56. **Autumn Bergamot.**—Ripens in the beginning of October; keeps some weeks; is smaller than the last; flesh melting, and the juice highly perfumed. It is a great bearer, and worthy of a wall upon an east or west aspect.

57. **Williams' Bonchretien.**—A seedling from Berkshire, and known to have originated in the garden of a schoolmaster, at Aldermaston, in that county, about thirty years ago. A valuable pear for the market-gardeners. Is a great bearer, and succeeds the Windsor and Jargonelle, and bears well upon standards; it very much resembles the Summer Bonchretien. Color pale green and russet; very juicy; and of a pyramidal form.

58. **Summer Bonchretien,** or *Gracioll.*—Very juicy; richly perfumed.

59. **True Golden Beurré.**—Ripens in October. Resembles the brown Beurré in size; color reddish brown next the sun; is a very fine fruit; but does not keep long.

60. **Beurré Capiaumont.**—Introduced here from Brussels in 1820. Has been fruited by Knight, Braddick, and others. Fruit larger than the St. Germain's; pyramidal, tapering very much towards the stalk, which is long and slender; skin smooth, of a light cinnamon color, with a rich gold color showing through it; flesh white, perfectly white melting juice, rich and sugary; keeps till the end of November.

61. **La Bonne Malinoise.**—Introduced here in 1818 or 1819. Has fruited in this country, and is recommended as an excellent pear; skin of a dull pale yellow color, very much covered with smooth russet in large patches; flesh yellowish, melting, extremely rich and sweet; ripens towards the end of November.

62. **The Forelle Pear.**—A German variety, brought into Flanders, and thence into this country. It is named Forelle (Trout) from its color, which resembles the rich spotting of that fish. In shape and size it much resembles the Doyenné Blanc, though perhaps a little more oval; skin bright yellow, very deep on the side next the sun; sprinkled with many small yellow spots, surrounded by a brown or reddish ring, which gives the fruit a singular appearance; flesh white, melting, without grit,

juicy and very sweet, without perfume. Ripens in November, and may probably keep a little longer.

63. **Beurré Diel.**—Originated by Van Mons, at Brussels, and introduced here about 1820. Fruit large, resembling a fine Summer Bonchretien in shape; skin smooth, of a bright citron color; flesh white and melting; juice rich and sweet; ripens in November, and will keep during the following month.

64. **The Urbaniste.**—Originated by Count Coloma, and has been fruited here by Knight, Braddick, and others; fruit egg shaped; skin pale green, inclining to yellow, much spotted with greenish spots, and sprinkled over with thin russet patches, particularly round the eye and stalk; flesh white towards the outside, but deepens to a reddish color towards the core. It is quite melting, juicy, and very sweet, but without perfume; keeps till October.

65. **Beurré Rouge,** or *Red Butter Pear.*—Ripens about the beginning of October; very melting, and full of rich sugary juice. Is one of our best sorts of buttery pears, if eaten off the tree.

66. **Green Yair,** or *Green Pear of the Yair.*—Said to be indigenous to a beautiful seat on the river Tweed, about thirty miles from Edinburgh. Color green; size small; sweet and juicy. Should be eaten off the tree; does not keep many days; is a great bearer, and free grower.

67. **Doyenné,** *Dean's Pear, Carlisle White Beurré, St. Michael's, Diana.*—Ripens about the beginning of October; juice cold and melting; and is a great bearer.

68. **Verte-longue,** or *Long Green.*—Ripens by the end of October; flesh melting and juicy.

69. **Swiss Bergamot.**—Ripens about the beginning of October. This pear is much grown upon the walls in Scotland; of middle size; color green, striped with red; juicy and high flavored. The tree is a very good bearer, if planted in good soil.

70. **Monsieur John.**—Sometimes called *White,* and sometimes *Grey Monsieur John.* The difference of their color proceeding from the soil and situation in which they grow. Ripens in the latter end of October or beginning of November; juice rich and sugary; is upon the whole one of our best pears for this season.

71. **Pender,** or *Knave's Pear.*—Ripens by the end of October; flesh fine and tender, very much sugared.

72. **Vine.**—Ripens in November; color dark red; flesh very melting, and full of a clammy juice.

73. **Flowered Muscat.**—Ripens about the end of November; is an excellent fruit; flesh very tender, and of a very delicate flavor.

74. **Roussiline.**—Ripens about the latter end of October; color deep red, with spots of grey; flesh very tender and delicate; juice very sweet, with an agreeable perfume.

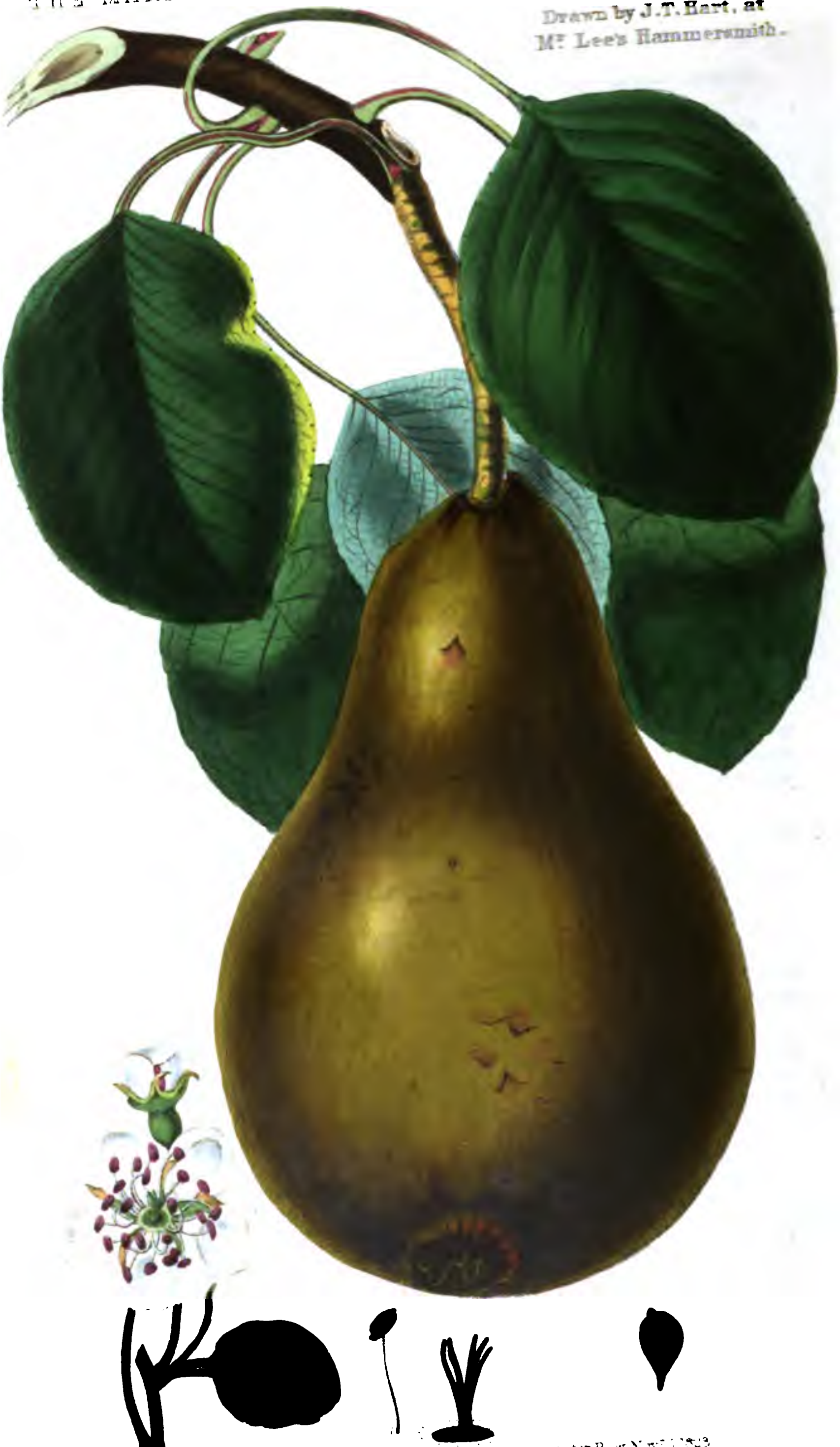
75. **Marquesse.**—Ripens into eating in November; color yellow; but when it does not ripen to that color, seldom good, but if it does, the flesh will be tender and delicate, and very full of sugary juice. Cultivated at Little Chelsea above one hundred years ago.

76. **Gansell's Bergamot.**—Differing little from the autumn Bergamot, said to be the same thing improved by culture. Is a very high fruit when well ripened.

77. **Red Doyenné.**—An old variety brought into notice by Mr. Knight; color red and pale green; is in eating in October and November. Great bearer and good fruit; tree extremely hardy, and excellently suited for cottage gardens. Mr. Salisbury mentions an old tree of this sort taken down at Strawhill, near Halifax, in 1779, which must have been above one hundred years old.

THE MARIE LOUISE PEAR.

Drawn by J.T.Hart, at
Mr Lee's Hammersmith.



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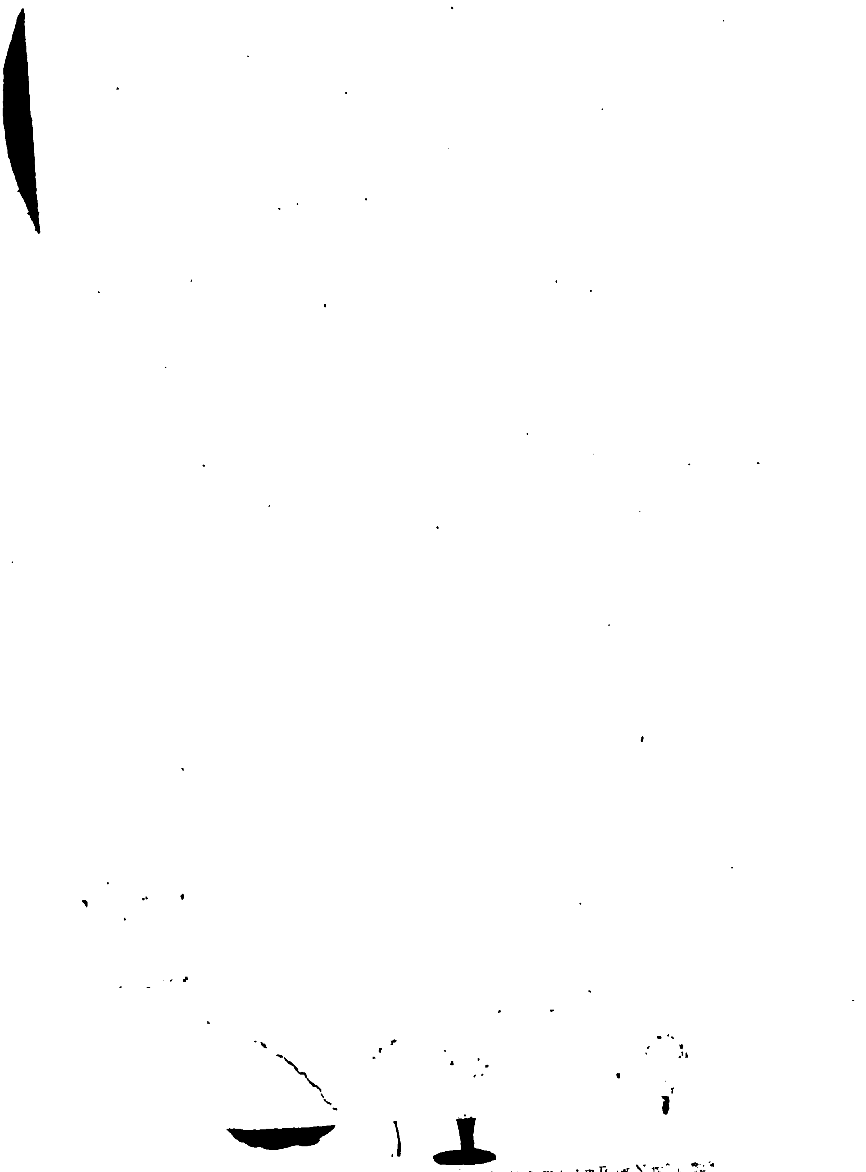

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78. **Golden Beurré.**—Comes into use in October; color scarlet and gold; high flavored, and a great bearer, succeeds best upon an east aspect, and in a loamy soil

79. **Marie Louise.**—This is one of the numerous seedlings which have been raised of late years in the Netherlands, and is one of the finest pears we have. The figure in this work, by Mr. Hart, junior, was taken from the private garden of Mr. Lee, of the Hammersmith Nurseries.) It is said to have been raised by the Abbé Duquesne, together with the Napoleon pear, and introduced into this country by the Hort. Soc., through Dr. Van Mons, of Brussels. Its general form is like that of the St. Germain, but tapering less towards the stalk; the skin is of a greenish yellow, deepening where exposed to the sun, or when full ripe to a rich yellow, clouded with light brown russet. The stalk is generally an inch and a half long; pale brown; flesh inclining to yellow; perfectly melting, with abundance of sweet juice. It varies in size according to circumstances; in favorable situations and good soils, it is about five inches long and three inches wide, and weighing about eight ounces. It is in perfection from the middle of October, till the middle or end of November, according to the place of its growth. It requires a south wall to bring it to perfection, but will not answer in this climate upon standards.

80. **Seckle Pear.**—This excellent pear is of American origin, and introduced here by the Hort. Soc. In shape it resembles the swan's egg, but is a little longer. Stalk from half an inch to an inch long; eye not sunk, but even with the head of the fruit; skin of a greenish olive color, often washed with much dull or bronze red on the side exposed to the sun, and sometimes slightly streaked with a lighter red; flesh yellow, very fine in texture, melting, juicy, and sweet, with a delicate and extremely powerful bergamot perfume; it is in this perfume, that the character of this pear differs from all others, and which has caused it to be so highly extolled in America. With us it is in perfection about the end of October and beginning of November, but is much earlier in its native country. It ripens upon espaliers or standards in very favorable places, but its merits deserve a wall in general.

81. **Charles d'Autriche.**—Another new variety of pear from Dr. Van Mons; fruit rather large; stalk about an inch long; eye in a confined cavity, not deeply sunk; skin greenish yellow, profusely sprinkled with brown spots, and partially russeted; flesh melting, white, very juicy, with a rich high flavor, but with little or no perfume; comes into eating about the middle of November, requires a wall of an east or west aspect to bring it to perfection; fruit beautiful and good.

WINTER DESSERT PEARS,

Arranged in their Order of Ripening.

82. **Crassanne.**—Comes into eating about the latter end of December. This is an excellent fruit, and is esteemed the best of all the Bergamots. It is highly flavored when fully ripened, of a roundish moderate size, and greyish color, and covered with small brown specks. It is the best keeper of all the bergamots; none of them being good keepers. It requires and deserves a south wall, although we have had it in tolerable perfection upon an almost north aspect. It succeeds best in a strong rich loamy soil; seldom succeeds upon standards.

83. **Lansac,** or *Dauphine.*—Is in eating about the beginning of December; flesh tender, yellow, and melting. The juice is sugared, and a little perfumed.

84. **St. Germain.**—Is in eating from December till February; color russet green; flesh melting and very juicy, which, in a dry season, or if planted in a dry soil, is highly flavored. It is an excellent bearer when planted as a dwarf standard,

and comes in succession after the other pears of the same sort on walls are over. In good soils it comes of a large size and keeps well.

85. WINTER ACHAN.—*Grey Achan*, *Red Achan*, and *Black Achan*, varieties of the same fruit, probably arising from soil and situation. The varieties are much esteemed in Scotland, and generally cultivated. It is supposed to be of French origin, but must have been introduced very early into that country. It is of middling size when a great crop, but swells to a largish fruit when a middling one; is a great bearer, and keeps well; it has a sweetish and rather peculiar flavor.

86. MARTIN SEC, or *dry Martin*.—Is in eating about the middle of December, is much like the Russelet in shape and color; flesh breaking and fine; and the juice sugared, with a little perfume.

87. AMADOT.—In eating about the middle of December; is rather dry, but high flavored.

88. EPINE D'HIVER, or *Winter Thorn*.—Is in eating by the latter end of December; pulp tender and buttery, of an agreeable flavor; sweet juice, highly perfumed.

89. LITTLE LARD, or *Wonder of Winter*.—Is in eating by the end of December, and is reckoned one of the best fruits in this season; flesh melting; juice much sugared, and has an agreeable and musky flavor.

90. LOUIS-BONNE. *Good Louis*.—Is in eating about the middle of December; flesh extremely tender, and full of a very sweet juice; esteemed an excellent fruit.

91. L'ESCH ASSERIE.—Is in eating about the beginning of January; flesh melting and buttery; juice sugary, with a little perfume. It bears best on standards.

92. PASSE COLMAR.—Originated by M. Hardenpont of Mons. Fruit as large as a Colmar; more tapering towards the stalk; skin pale green, slightly marked with red on the side next the sun, and sprinkled with very small green spots; flesh yellowish, melting, though not buttery; very juicy, and extremely sweet; keeps till the end of December, and even later.

93. THE BEZY VAET.—Originated by M. Parmentier, at Enghien. It has fruited in the gardens of Lord Henry Fitzgerald, at Thames Ditton. Fruit resembling the swan's egg in form, but larger; skin dull green, sprinkled with a little russet; flesh yellowish, perfectly melting, remarkably sweet, and very agreeably perfumed; is an abundant bearer, and is said by M. Parmentier to keep till April, but does not appear to keep with us beyond the end of November or middle of December.

94. THE BEURRÉ D'AREMBERG.—Cultivated on the continent. This pear is stated to keep till the beginning of May; with us it is not found to keep beyond the middle of November. Thus a difficulty presents itself in giving any description of fruits, at least as to their time of keeping. It is a well ascertained fact, that apples and pears, in one soil and situation, will remain good till April and May, while the same variety cultivated in a different soil or situation, will become mealy and insipid in the end of October, and often decay altogether.

95. COLMAR.—Is in eating about the beginning of January; flesh tender, and juice highly sugared. Fruit large, long, and of a greenish yellow color, when fully matured; for to be in perfection, requires a good wall and good soil; it is not in all seasons that it really comes to full maturity here. It is not a great bearer, rather otherwise; it is a good keeper.

96. BRIER-BUSH.—A Scotch fruit; rather small, firm, and of good taste; ripens in most seasons.

97. ROUND WINTER.—A Clydesdale fruit; an excellent winter pear.

98. AMBRETTE.—Comes into eating about the beginning of January; flesh quite melting, and full of highly-perfumed juice. It is esteemed an excellent pear.

99. VORGOULEUSE.—Comes in by the first of January; is esteemed one of the best winter pears. It requires a good soil and situation; if in a cold one, or in a cold wet season, it is very apt to crack before it becomes ripe. The flesh is melting, and full of rich sweet juice.

100. CHAPMAN'S.—Resembles the Passe Calmar; of American origin, introduced in 1815; rather small, smooth; russet color; is in use from December till May. Bears on young wood, like a Morella cherry.

101. SPANISH BONCHRETIEN, or *Autumn Bonchretien.*—Is in eating in January; large fine pear; flesh breaking, juicy and sweet.

102. ST. AUSTIN.—Is in eating from the middle to the end of December, and continues good till March; flesh tender, but not buttery; juicy, and rather sharp.

103. WILDING OF CASSOY, or *Small Winter Butter Pear.*—Fruit small; flesh melting, and juice very sweet and rich; is in eating in January, and is an excellent bearer on standards.

104. BROWN, ST. GERMAINS.—In eating from December till April. High flavored; bears well on dwarfs or standards, and comes in after the wall-fruits of the same sort are over.

105. PEAR D'AUCH.—Introduced by the Duke of Northumberland in 1780. It much resembles the Colmar, but is fuller towards the stalk; continues good from December till April, and is one of the best winter pears we have.

106. MARTIN SIRE, or *Lord Martin.*—Is in eating in January; flesh breaking, full of juice, which is very sweet, and somewhat perfumed.

107. WINTER ROUSSELET.—Is in eating about the end of January; flesh buttery and melting, and generally full of sweet juice.

108. ROUND WINTER.—A Clydesdale fruit, much esteemed for winter use.

109. HOLLAND BERGAMOT, or *Chenies Bergamot.*—Keeps from the end of January till April; flesh half buttery and tender; juice high-flavored. Is altogether an excellent pear.

110. BROWN BEURRÉ, or *Beurré de Roy*, or *Red Beurré.*—In eating from October till December or January; color reddish brown on the side next the sun, and yellowish where shaded; flesh melting and full of rich juice; an excellent pear.

111. GERMAN MUSCAT, or *Muscat d'Allemande.*—Is in eating from February till April or May; flesh buttery and tender; juicy and high-flavored.

112. SWAN'S EGG.—A good fruit in tolerable good soil; a great bearer; is a good keeper; egg-shaped, and greenish.

113. PEAR OF NAPLES, or *Easter St. Germain.*—Is in eating in March; juice sweet, and a little vinous.

114. BONCHRETIEN, or *Winter Bonchretien.*—Is in eating from March till June; flesh tender; very full of rich sugared juice; fruit large size.

115. CHAUMONTELLE, *Winter Beurré.*—An excellent table pear, and keeps well. Duhamel has stated, that the original tree of the Chaumontelle was alive and in health about the end of the last century; and Knight supposes the tree to be still living.

116. BERGAMOTTE DE PASQUE, or *Terling*, *Amoselle*, *Paddington*, and *Tarquin.*—Comes into eating about April, and lasts till June; fine handsome fruit; green when gathered, and when ripe of a yellowish straw color; makes a very handsome appearance at table.

117. ST. MARTIAL, or *Angelique.* (*The Angelic Pear.*)—Is in eating in March; flesh tender and buttery; juice very sweet.

118. BROWN ST. GERMAIN.—Continues from the end of December, till the end of March.

119. La Pastorale.—Is in eating in March; flesh tender and buttery; juice rich; very sweet.

120. Golden Beurré.—Was introduced from Burgundy by Marshal Conway, and first cultivated in this country, at his seat, Park-place, near Henley-upon-Thames; color beautiful scarlet next the sun, and yellow upon the shaded side; flesh melting; juice high-flavored; ripens in October.

121. Muir Fowl-Egg.—An esteemed Scotch fruit. Tree hardy; bears well upon standards; good bearer; color green and brown.

122. John Monteath.—Another esteemed Scotch fruit; an excellent bearer upon standards or walls.

123. Longueville.—An old Scotch fruit. An excellent bearer either upon walls or standards. Probably has been brought from France originally by some of that ancient family.

124. Green Sugar.—An esteemed Scotch fruit. Smallish size, juicy, and rather well-flavored; great bearer upon standards.

CULINARY PEARS,

Arranged in their Order of Ripening.

125. Poir Portrail, or *Gate Pear.*—An excellent culinary fruit.

126. Unicorn.—A beautiful fruit; colour red and yellow; rather austere.

127. Le Besideri, or *Wilding of the Forest of Heri in Bretagne.*—Handsome upright tree.

128. Black Pear of Worcester, or *Parkinson's Warden,* or *Pound Pear.*—Good bearer, and keeps long.

129. La Double Fleur, *Double Flowering.*—Large flat beautiful pear; skin smooth; color yellow on one side, and blueish on the other. It is the best pear to preserve, taking a fine red color from the fire.

130. Bloody.

131. Pou Meg.—An esteemed Carse of Gowrie fruit, (Scotch) Hardy tree, and good bearer.

132. Catellac.

133. Union, or *Uvidale's St. Germain, Pickering's St. Germain.*—Free growing tree.

134. Franc Real, or *Golden End of Winter.*

135. Spanish Red Warden.

PEACHES.

Peach, *Amygdalus Persica, Linnæus,*—belongs to the class and order *Icosandria Monogynia,* and natural order *Rosaceæ.*

Is a native of Persia, and was introduced into Europe by the Romans, during the reign of Claudius, and is described by Columella, and afterwards by Pliny. The former says, that when it was first brought into the Roman Empire, it possessed deleterious qualities. Knight, however, supposes those peaches to have been only swollen almonds, or imperfect peaches, and which are known to contain the Prussic acid, which operates so unfavorably on some constitutions. The peach was deemed unwholesome in Media; but when planted in Egypt, it became delicious and salubrious. In Asia, it has been cultivated from time immemorial; but when it was introduced into Greece is not known. It is still cultivated in Italy, and is there grown on standards superior to any other in Europe. The Montreuil gardeners are noted for the fineness of their fruits, which they grow upon low walls. They divide their peaches into two classes: pavies, and peaches. The first class, or pavies, we call clingstones, from the flesh adhering to the stone, and are with us held in least estimation, for want of sufficient heat to ripen them properly. In France they are esteemed the best as well as in Amcrica. The second class, or peaches, are by us distinguished by the appellation of free-stones from the flesh readily coming away from the stone, and are by us held in the highest estimation, while, on the other hand, the French and Americans consider them to be inferior. The Americans are said to feed their pigs with the free stones, and to use the clingstones or pavies for eating only.

There the whole population has been maintained for several generations by the cultivation of this fruit, which is their sole occupation. The late Sir Joseph Banks very justly remarked, that, "it is there alone where the true management of this delicious fruit can be studied and attained; for it is impossible, from written precepts, to acquire the whole art. The modes of winter and summer pruning, are varied, not only according to the differences of soil and exposure, but even according to the state and constitution of every individual tree." Like the American peach-growers, the French cultivate many sorts they have never budded, but always reared from the stone, and others they bud on stocks of a sort of half wild peach, called *Peche de Vigne*. In consequence of this arrangement of one species of fruit coming under the management of individuals for many generations, they are brought to a degree of perfection, which can never be attained in a garden where fruits of all sorts, and a variety of other equally important duties fall to the care of a gardener.

In the United States, particularly in the middle and southern provinces, it is no uncommon circumstance for the owners of some of the peach orchards to be possessed of such a number of peach-trees as are sufficient, after fermenting and distilling the juice to produce from fifty to a hundred barrels of peach brandy. The manufacturing of this liquor, and the feeding of hogs, being the principal uses to which the peach is applied in those countries. In the vicinity of Buenos Ayres, in South America, where fire-wood is scarce, peach-trees are raised from the stone chiefly for the purpose of burning.

Knight is of opinion that the peach may yet, by proper cultivation, be sufficiently hardened as to be naturalized to the climate of England, so as to succeed even as a standard in favorable situations.

There are of peaches, as well as all other fruits, long catalogues of names. Parkinson, in 1629, enumerates 21 sorts. Miller, in 1750, described 31 varieties. In the Nursery Catalogues, both of Paris and London, there are enumerated nearly 100 varieties; and the Horticultural Society's Catalogue enumerates 224 sorts.

In the following lists we will confine ourselves to such as are well known, and sufficiently described.

1. **White Nutmeg.**—Fruit small, round, white; juice sugary; is chiefly esteemed for being first ripe; ripens in July.

2. **Red Nutmeg.**—Fruit much larger than the last, round; bright vermilion; flesh white, red next the stone; is a great bearer, and ripens soon after the last; is esteemed a better fruit.

3. **Early Avant.**—Fruit large, red, has an agreeable flavor, and ripens in August.

4. **Small Mignonne**, or *Early Mignonne.*—Fruit middle-sized, round; very red on the side next the sun; flesh juicy, and of a vinous richness; pulp white, and red towards the stone; ripens about the beginning of August.

5. **Early Anne.**—Said to have originated from seed at Pusey, in Berkshire, and named after Mrs. Anne Dunch, of that place. Fruit small, round; very white, both in skin and flesh; rather rose-colored, when fully ripe and exposed to the sun; high flavored; one of our best early peaches, and should hold a place upon the walls of every garden; ripens the beginning of August.

6. **Early Purple**, *Pourpre Native.*—Fruit large, round; fine deep red or purple; flesh white, very red next the stone; juicy and high flavored; is an excellent fruit; ripens about the middle of August.

7. **Neal's Early Purple.**—Approaching the last in point of merit, but inferior; ripens about the middle of August.

8. **Superb Royal.**—Fruit large; high colored when fully exposed to the sun; flesh white, juicy; a fine fruit; ripens about the middle of August.

9. **Great Mignonne**, *Grosse Mignonne*, or *Large French Mignonne.*—Fruit large, round; greenish yellow where shaded, rose-colored where exposed to the sun; flesh white, sugary, high flavored. One of our finest peaches, but rather tender; is generally wrought upon a peach or apricot stock; ripens by the middle of August.

10. **White Magdalen.**—Fruit rather large, round; of a yellowish white, with sometimes delicate red stripes; flesh white to the stone; an exceedingly tender tree, but in a peach-house one of our finest; upon the walls it ripens about the middle of August.

11. **Early Newington**, or *Smith's Newington.*—Fruit middle size, roundish; fine red; flesh white and firm, red at the stone, to which it is partially attached; ripens about the end of August.

12. **Belle Chevreuse.**—Fruit middle-sized, oblong; red and yellow; flesh also yellow; juice rich; fine fruit, and tree a good bearer; ripens by the end of August.

13. **Early Admirable.**—Fruit large, round; reddish and white; flesh white, red towards the stone; flavor high and vinous.

14. **Early Violette.**—Of French origin. Fruit large; ripens about the end of August.

15. **Red Magdalen.**—Fruit large, round; fine red; flesh firm, white, very red near the stone; flavor exquisitely rich; ripens about the end of August. Tree extremely subject to mildew in all situations.

16. **Montauban.**—Fruit middle size; deep red, inclining to purple next the sun, pale towards the wall; flesh melting; rich juice; ripens by the end of August. Tree a great bearer.

17. **Royal Charlotte**, *Queen Charlotte.*—Fruit above the middle size; yellowish white; very fine fruit; ripens about the end of August.

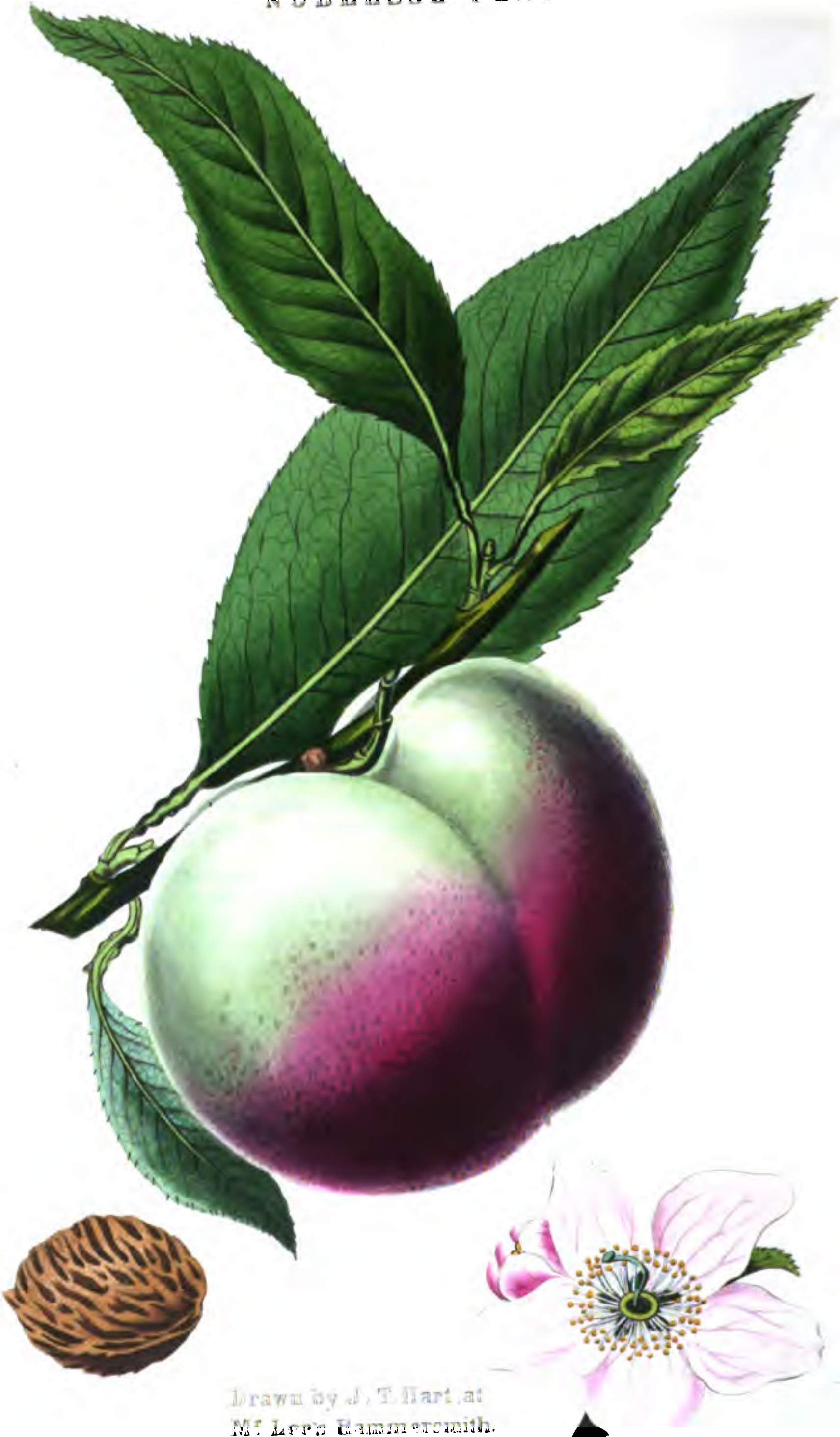
18. **Double Mountain.**—Of French origin. Fruit large; ripens about the end of August.

19. **Chancellor.**—Fruit middle-sized, oval; flesh white and melting; ripens about the end of August. Tree tender; will not succeed on common stocks, should be wrought upon peach or apricot stocks.

20. **Bellegrade**, *Gallande.*—Fruit very large, oblong rather than round; deep purple; flesh white and juicy, red near the stone; flavor excellent; ripens about the middle of September.

21. **Gallande**, *Ronald's Early Gallande.*—Fruit large; fine flavored; flesh white, red towards the stone; originated at the Brentford Nursery; ripens about the beginning of September.

NOBLESSE PEACH.



Drawn by J. T. Hart at
Mr Lee's Hammersmith.

London Published by Thomas Kelly, Paternoster Row Feby 1 1829.

NOBLESSE PEACH.

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22. **Malta,** *Italian Peach.*—Fruit middle-sized, of an irregular form; deep green and red marbled; beautiful fruit; flesh white, deep red near the stone; fine flavored, and a good bearer; ripens about the beginning of September.

23. **Bourdine,** *Narbonne.*—Fruit large, round; dark red; flesh white, quite red at the stone; flavor good; ripens about the beginning of September; when old it is an excellent bearer, and the fruit becomes improved. It answers well in favorable situations as a standard, producing its fruit ripe in October.

24. **Royal George.**—Fruit largish, round; flesh melting, rich; sets with less air than most other peaches; is extremely well calculated for forcing; ripens about the middle of August; is a great bearer.

25. **Royal George, Grimwood's.**—Fruit large, round; flesh melting; high flavor; a tree apt to mildew; ripens about the middle of August.

26. **Alberge Yellow.**—Fruit middle-sized, longish; deep red and yellow; flesh yellow, and red near the stone; flavour good; ripens about the beginning of September.

27. **Violette Hative.** — Fruit very large; yellowish red; ripens about the beginning of September.

28. **Late Violet.**—Fruit very large; violet marbled with red; flesh pale yellow; ripens about the beginning of September.

29. **Rosanna.**—Fruit middle-sized, longish; deep red and yellow; flesh yellow, and red towards the stone; flavor good; ripens beginning of September. This, as has been observed by Duhamel, is a variety of the Yellow Alberge, but has not been sufficiently distinguished from it by the British gardeners: it ripens a little later than the Alberge, and is superior to it in quality. This fruit has ripened upon a standard in the nursery grounds of Mr. Joseph Kirk, Brompton; and in favorable situations might be found to answer as such.

30. **Royal Kensington.**—Introduced into the Royal Gardens at Kensington, in 1780. Fruit above middle size, roundish; high red and yellow; flesh juicy and rich. One of the best peaches we have, and is not apt to mildew or blight; great bearer; ripens about the beginning of September; resembles the old Royal George.

31. **Rambouillet,** or *Rumbullion.*—Fruit middle-sized, roundish, deeply furrowed; fine red and bright yellow; flesh deep red at the stone, melting, fine flavored; ripens about the beginning of September.

32. **Nivette.**—Fruit large, roundish; bright red towards the wall and pale yellow in the shade; flesh greenish yellow, and reddish near the stone; juicy and well-flavoured; ripens about the middle of September.

33. **Noblesse.**—Fruit very large, round, pale yellow, inclining to be reddish next the sun; flesh juicy and rich. It is a great bearer, and one of our finest peaches; ripens about the middle of September. (The figure in this work, by Mr. Hart, junior, was taken from a tree in the nursery of Mr. Mackay, of Clapton.)

34. **Spring-grove.**—Originated by Knight, at Downton Castle, in 1814, from the large Mignonne and Nutmeg peaches. Fruit middle-size, round; dark red next the sun, bright yellow on the shaded side; flesh firm, but melting; of exceedingly good flavor. Tree rather tender; succeeds best upon an apricot stock; is a good bearer, and ripens about the middle of September.

35. **Acton Scott.**—Another which originated with Knight, at Downton Castle, from the Noblesse and Nutmeg peaches, in 1814. Fruit middle size, round; red and white; delicate looking fruit; flesh rich, juicy, and sweet. Tree hardy, not apt to mildew or gum; good bearer; ripens about the middle of September.

36. **Incomparable,** *Pavie Admirable.*—Fruit very large, irregular; an esteemed fruit; ripens about the middle of September.

37. **VANGUARD.**—Fruit large, roundish; not high colored; flesh melting and well flavored; ripens about the end of September.

38. **VINEUSE.**—Fruit middle size, round; red all over; flesh white, red towards the stone; high flavored. Tree a good bearer; ripens about the end of September.

39. **LATE PURPLE,** *La Pourpre.*—Fruit large, round; dark red and yellow, approaching to purple; flesh melting, white, red towards the stone; sweet and high flavored; ripens about the end of September.

40. **FLAT PEACH OF CHINA.** This singular peach is thus described in the Transactions of the Hort. Soc.: "This fruit is of truly singular form, and perhaps will be best described as having the appearance of a peach flattened by pressure at the head and stalk; its upright diameter, taken through the centre, from eye to stalk, being eleven-sixteenths of an inch, consisting wholly of the stone, except the skin; that of its sides is one inch and one-eighth; its transverse diameter being two inches and a half. The head of the fruit is cracked in such a manner as to look like a broad and rather hollow eye, of an irregular five-angled (or lobed) shape, surrounded by the appearance of remains of the leaves of a calix; the whole surface of this eye is roughly marked with small irregular warted lines, like the crown of a medlar. The color of the skin of the fruit is pale yellow, mottled, or rather speckled with red on the part exposed to the sun, and covered with a fine down. The flesh is pale yellow, having a beautiful radiated circle of fine red surrounding the stone, and extending far into the fruit. The stone is flatly compressed; small, rough, and irregular. The consistency and flavour of the flesh are that of a good melting peach, being sweet and juicy, with a little noyeau flavour, or bitter aroma. It was introduced into this country by Mr. Joseph Kirke, of the Brompton Nursery, from Java, under the name of the Java peach, to which country it had no doubt been carried from China. Plants of the same fruit have been introduced from that country by the Hort. Soc. Its real merits will not warrant its admission into small gardens, or where fine fruit only is an object. Its singularity, however, claims a place in the collections of the curious.

41. **TETON DE VENUS,** *La Teton de Venus,* or *Venus's Breast.*—Fruit middle-sized, irregular; faint red next the sun, straw color next the wall; flesh white, melting, red towards the stone; flavor rich and sugary. Tree a shy bearer; ripens its fruit about the end of September.

42. **BLOODY PEACH,** *Sanguinole.*—Fruit middle-sized; deep red next the sun; flesh also deep red; seldom succeeds upon the open walls, and even in favorable seasons is fit for preserving or culinary uses only. When in a peach-house, it is much improved, but is seldom met with, except in large collections of peaches, as there are so many preferable. It ripens about the end of September.

43. **DOUBLE SWALSH.**—Fruit very large. It is one of our finest large late peaches; ripens about the end of September.

44. **YELLOW ADMIRABLE.**—Fruit middle-sized, roundish, oval; bright yellow; somewhat like an apricot, both in color and flavor. It is often called the *Apricot Peach.* It is an excellent fruit; and ripens about the end of September.

45. **BRADDICK'S AMERICAN.**—Fruit large, irregular; purplish and orange; flesh melting, musky, and juicy. It does not appear suited for the open wall, unless under very favorable circumstances. In the peach-house it is a showy and valuable addition; is a good bearer; and ripens on the walls about the beginning of October.

46. **LATE ADMIRABLE.**—Fruit rather large, round; bright marbled red; flesh greenish, white veined, with red at the stone, to which it is firmly attached; ripens about the end of September.

47. **Bellis,** *La Belle de Vitry.*—Fruit middle-sized, round; pale red towards the sun; flesh white, red towards the stone, to which it is attached; ripens about the end of September.

48. **Portugal.**—Fruit middle-sized; beautiful red towards the sun, generally spotted; flesh firm and adhering to the stone; ripens about the end of September.

49. **Buckingham Mignonne.**—Fruit large; red and white, flesh juicy, white, red towards the stone, to which it is not much attached.

50. **Golden,** *Orange.*—Fruit above the middle size, round; crimson, with rich purple and gold; a beautiful fruit; flesh deep yellow, crimson near the stone; fine fruit; ripens about the end of September; flesh attached to the stone.

51. **Persique.**—Fruit large, oblong; fine red; flesh firm, white, red near the stone; juicy and highly flavored. Tree a shy bearer; ripens about the end of September.

52. **Old Newington.**—Fruit large, roundish; fine red, particularly next the sun; flesh white, red near the stone, to which it is attached, an excellent fruit; ripens about the end of September.

53. **Cherry Peach.**—Fruit small, globular; red and whitish; flesh melting; tolerably well-flavored; a handsome fruit; ripens about the end of September.

54. **Millet's Mignonne.**—Fruit middle-sized, roundish; high-colored towards the sun; fine-flavored; ripens about the middle or end of September.

55. **Catherine.**—Fruit large, round; dark red towards the sun; flesh melting, and full of rich juice; flesh adhering to the stone; is much improved by being gathered two or three days before it is eaten, as it does not always sufficiently ripen upon the walls. It is a great bearer, and excellent for the purpose of preserving in brandy. It ripens about the beginning of October; is worth room in a large peach-house, where there are also many other preferable peaches grown.

56. **Monstrous Pavie,** or *Royal Pavie.*—Fruit exceedingly large, globular; fine red and greenish white; flesh white, melting, deep red towards the stone, to which it firmly adheres; pretty juicy, and well-flavored; ripens about the beginning of O tober.

NECTARINES.

Nectarine, *Amygdalus Persica, variety,*—belongs to the class and order *Icosandria Monogynia,* and ranks in the natural order *Rosaceæ.*

Is a variety of the peach, although former botanists considered it a distinct species, under the name of *Amygdalus Nusi-Persica,* from the fruit, in its unripe state, resembling in smoothness, color, and size, the covering of the walnut. The name of nectarine, is supposed to be derived from nectar, the fancied drink of the gods. The circumstance of both peaches and nectarines growing upon the same tree naturally, and even the same fruit partaking of the characters of both, justifies modern botanists in considering them merely as varieties of the same species. The first instance of which we have any account of these fruits being observed growing upon the same tree, is in a communication between Peter Collinson, Esq., and Linnæus. The second occurred at Londesborough, the then residence of the Earl of Burlington, and was visited by several scientific people of the day. The third instance is commemorated by a painting in the possession of Mr. Lee, accompanied with a dissection of the two fruits. The fourth instance was observed at East Sheep, in the garden of William Gilpin, Esq.; of this there is also a painting by Mr. Hooker. The fifth was discovered on the wall of Sir John Arundel, at Huntingdon, in June, 1802. A sixth instance occurred in the garden of Mr. Wilmot, at Isleworth. The tree in this garden which produces fruits with both smooth and downy coats, or in fact, peaches and nectarines, is the Royal George, and seldom fails to produce them annually. It does not appear, that ever any distinct marks were observed upon either, excepting in the smoothness or roughness of the skin only; the essential characters of their flowers, leaves, wood, and habit of growth being the same. They are supposed to possess finer flavor than peaches, and even to surpass every other fruit in that point. It is a native of the same country with the peach, and probably travelled into this country by way of Italy. It is cultivated in all latitudes in which the peach is grown, and succeeds equally well in all.

There are many varieties of nectarines, but they are not so numerous as peaches. The Horticultural Society's Catalogue enumerates 72 sorts.

1. Fairchild's Early.—Fruit smallish, globular; beautiful red color next the sun; flesh firm, and highly flavored; ripens about the beginning of August.

2. Elruge.—Said to have been first cultivated by Gurle, a nurseryman, at Hoddesden, in the time of Charles the Second; fruit middle size; dark red next the sun, pale yellow on the opposite side; flesh soft, melting, fine flavor; ripens the end of August, or beginning of September. A tree of this sort is described in the Hort. Trans. as growing in the garden of Lord Selsey, at West Dean, which covers a trellis, in one of the peach-houses, of six hundred and thirty-eight square feet; supposed to have been planted 1793, and continues to produce excellent crops of fruit.

3. Scarlet.—Fruit rather small; fine scarlet next the sun, pale red next the wall; ripens about the end of August.

4. Italian, or *Brugnon*.—Fruit middle-sized; deep red next the sun, approaching to black, pale yellow on the side next the wall; flesh adhering to the stone; fine flavor; ripens about the end of August.

5. Early Newington.—Fruit above the middle size; fine red next the sun, yellowish on the other side; flesh exceedingly high-flavored, adhering firmly to the stone, and is supposed one of the finest of the family; ripens about the end of August.

6. White Nectarine.—Fruit above the middle size; cream-colored next the sun, greenish white next the wall; roundish; good flavor; but rather a shy bearer. Tree less subject to canker or blight than any of the species; succeeds better than most others upon a chalky soil; ripens about the middle of September.

7. Temple's.—Fruit middle-sized; pale red next the sun, yellowish towards the wall; flesh rich and juicy, separating easily from the stone; ripens about the middle of September; when over-ripe it shrivels, and then the flavor is exquisite.

8. Duc de Tillo.—Is of Spanish origin; fruit larger than any of the species; dark, approaching to purple next the sun, and bright red on the under side, parting readily with the stone; flavor exquisite. Tree hardy, and a great bearer; deserves a place in every peach-house as well as on the walls; ripens about the middle of September.

9. Vermash, *Late Green*, or *Peterborough*.—Fruit middle-sized, round; always of a greenish color; flesh firm and well flavored; ripens about the end of September or beginning of October.

10. Red Roman.—Fruit large size; dark red next the sun, yellowish next the wall; flesh rich and juicy; ripens about the middle of September; fine fruit.

11. **Late Newington.**—Fruit middle-sized; red towards the sun, yellow next the wall; flesh rich and juicy; ripens about the middle of September. Forsyth remarks, that this nectarine has smooth leaves, and that the early Newington has jagged ones, which is one of the most essential differences by which these two fruits are distinguished.

12. **Violet Hative**, or *Violet*.—Fruit middle size; purple next the sun, pale yellowish next the wall; flesh juicy and good flavored; ripens about the middle of September.

13. **Golden**, or *Yellow*.—Fruit, when in perfection, large, round; bright orange color, slightly tinged with red next the sun; flesh adhering to the stone, rather peculiar than high flavored; showy fruit; ripens about the beginning of October.

14. **Murray.**—Fruit middle size; dingy red, often almost black next the sun, pale greenish yellow next the wall; flesh parting freely from the stone, juicy and high flavored. Tree excellent bearer; ripens about the end of September.

15. **Claremont.**—Fruit middle size; flavor excellent; ripens about the end of September.

16. **Cowdray**, *White Nectarine*.—Introduced from Brussels by Antony Viscount Montague. Is different from the common white, or Flanders nectarine, in the peculiar length of its leaves, as well as being a much larger fruit; is perfectly white, and of exquisite flavor. Is sometimes called the White Brussels Nectarine; was first cultivated in the gardens of William Stephen Poynts, Esq., at Cowdray Lodge, near Midhurst.

APRICOTS.

Apricot, *Prunus Armeniaca, Linnæus*,—*Armeniaca vulgaris*,—belongs to the class and order *Icosandria Monogynia*, and ranks in the natural order *Rosaceæ*. Apricots have long been considered a part of the genus *Prunus*, from which it is now thought more advisable to separate them, and make a new genus, under the name of *Armeniaca*.

The native habitat of this tree is not known with any degree of certainty. It is most probably a native of Asia. From its trivial name, it is supposed to have originated in Armenia, but Regnier and Sickler, assign its origin between the Niger and the Atlas; and Professor Pallas says, that it is found on all parts of the Caucasus, the mountains there being covered to the top with it. Grossier and Thunberg describe it as a native of China and Japan; the former naturalist says, that the Chinese possess many varieties of it, which they plant in pots for their rooms. He also states, that the whole of the barren mountains, to the west of Pekin, are covered with it; and that the Chinese make lozenges from the clarified juice, which, dissolved in water, yields a cooling drink. It is the *Malus Armeniaca* of the ancients. It was introduced into Europe by the Romans, and brought from Italy to this country by Wolfe, a French priest, gardener to Henry the Eighth. It was cultivated here in 1562, and is noticed by Turner and Hakluyt. The definition of the name apricot, has given rise to a variety of opinions; Professor Martin has given the most simple and most probable. He observes, a tree, when first introduced, might have been called a *precox*, or early fruit, and gardeners taking the article *a*, for the first syllable of the word, might easily have corrupted it to *apricocks*. Kyle of Moredum is the first who writes it *apricot*, all the earlier writers wrote it *apricocks*.

There are many varieties of this fruit. Parkinson enumerates six sorts, Rea seven. The French and English Nursery Catalogues contain about 15, that of the Horticultural Society 54, of which 27 are considered as cultivated in the British gardens, the remainder are cultivated on the continent. It is supposed that this list will be greatly reduced, as we become better acquainted with their fruits; at present they are not sufficiently known to identify the names of the two countries to any extent.

1. **Early Masculine**, or *Red Masculine*.—An old variety, cultivated here in Charles the Second's time; fruit small, round; red towards the sun, and greenish yellow towards the wall, or where much shaded; flesh tender, and of rather a tart taste, for which it is esteemed, as well as its being the earliest apricot we have. Tree rather slender, but an excellent bearer; fruit ripens about the end of July.

2. **Orange.**—Has been cultivated here before 1702. Fruit large; deep yellow or orange color, when fully ripe; flesh dry and insipid; better calculated for culinary purposes than for the dessert. It is considered the best for preserving, as it retains its color; fruit ripens about the middle of August. Tree good bearer.

3. **Black.**—Introduced by Sir Joseph Banks, and cultivated in his garden at Spring Grove, about 1790, from France. It is much esteemed by the French, but is considered by us as very inferior to any of the other varieties cultivated. Fruit small; black or dark violet; ripens about the middle of August, which is its only merit.

4. **Turkey**, or *Large Turkey*.—Cultivated here before 1702. Fruit large, round; very deep yellow; flesh firm and dry; ripens about the middle of August.

5. **Algier**, or *White Algiers*.—Cultivated here before 1702. Fruit oval, flattish at the ends; straw colored; flesh juicy and high flavor; ripens from the beginning to the middle of August.

6. **Breda.**—Introduced from thence to this country in 1702, and originally brought there from Africa. Fruit large, round; deep yellow; flesh soft and juicy; is an excellent fruit; ripens about the end of August. Tree hardy; a great bearer, and well calculated for standards.

7. **Roman.**—Introduced here before 1702. Fruit large, round; deep yellow; flesh firm, not very juicy; ripens about the end of August.

8. **Moor Park**, *Anson's*, *Temple's*, and *Dunmore's Breda*.—This has long been erroneously supposed the Abricot Peche of the French; but that is a large tree, which may be raised from the stone without grafting; it ripens late in August; and the stone is so soft, that a pin will pierce through it, and the kernel is bitter. Introduced by Sir Thomas More, from the Netherlands, about 1700. This is one of the finest of the apricot family; ripens about the end of August; requires a good soil to bring the fruit to perfection; is rather a shy bearer, but one fruit is worth three of some of the other.

9. **Alberge.**—The only variety that produces the same fruit as the parent from seed.

10. **Portugal.**—Fruit small; tree pretty good bearer; flavor rather inferior.

11. **Peach Apricot**, *Apricot of Nancy*.—Introduced here, in 1767, from Paris, by the Duke of Northumberland, and cultivated in his grace's gardens at Sion House. Is the largest of all the family of apricots, and is often confused with the Moor Park. These two fruits resemble each other, but the leaves and character of the trees are very different; ripens about the end of August.

12. **Brussels.**—Introduced from Brussels, in 1702. Fruit middle-sized, oval; red with dark spots next the sun, greenish yellow in the shade; flesh juicy, not

liable to become mealy; flavor good. Tree hardy, and well calculated for a standard; it is a great bearer, and will grow in worse situations than any of the others. Fruit ripens about the end of August.

13. **Transparent.**—Fruit middle-sized; flavor not very good; its beautiful appearance recommends it to our notice.

PLUMS.

Plum, *Prunus Domestica, Linnæus,*—belongs to the class and order *Icosandria Monogynia*, and ranks in the natural order *Rosaceæ.*

Is by botanists considered a native or naturalized to Britain, and is taken up as such in all our native Floras; it is found in hedges and thickets, but its original country is supposed to be Asia, and, according to Pliny, it was brought into Greece from Syria, and thence into Italy. Plums, of all stone-fruits are considered the most wholesome when ripe; and, when unripe, are liable to produce complaints in the bowels.

The varieties of this fruit are now also numerous. Tasser, in 1573, mentions 10 sorts; Parkinson, in 1629, enumerates 60; and Philip Miller only 30 sorts. The French and English Nursery Catalogues name from from 70 to 100 sorts; and the Horticultural Society's Catalogue enumerates 298, including stocks.

1. **White Primordian**, or *Jaunehative de Canida.*—Fruit small, round, yellow; flesh mealy, of little flavor; being our earliest plum is almost the only merit it has; ripens in July; is a great bearer.

2. **Morocco**, or *Early Damask, Damascus, Black Damascus.*—Fruit middle size; red and blue; flesh juicy and pretty well flavored; ripens about the beginning of August.

3. **Great Damask.**—Fruit large, oval; blueish; flesh rich; ripens in August.

4. **Little Black Damask.**—Fruit smaller than the last; flesh rich; a good bearer; and ripens about the latter end of August.

5. **Blue Perdrigon**, or *Violet.*—Blueish red and yellow; flesh adhering to the stone, rich; good bearer; and ripens in August.

6. **Fotheringham**, or *Sheen.*—Fruit middle-sized; dark red; flesh juicy and rich; a good bearer; ripens about the middle of September.

7. **Orleans**, or *Red Damask.*—Fruit large, rather round; red; flesh firm; ripens by the end of August. Is much esteemed for culinary purposes; is seldom sent to table where better sorts are grown. It is a hardy tree, and an exceedingly great bearer, either upon walls or standards.

8. **White Perdrigon**, or *Perdrigon Blanc, Brignole.*—Fruit middle-sized; pale yellow and red; flesh rich, perfumed; an excellent fruit either raw or in sweetmeats; ripens about the beginning of September.

9. **Myrobalan**, *(Prunus Cerasifera) Cherry Plum.*—Native of North America. Fruit very small, round; red; flesh sweet. Tree thorny, and blossoms early; ripens about the beginning of September.

10. **Orleans, Wilmot's.**—Originated by Wilmot, an extensive market-gardener at Isleworth, in 1808; larger than the old Orleans, round; dark purple; flesh rich

and juicy; an esteemed fruit, and great bearer; ripens about the middle of September.

11. ROCHECORBON, or *Red Diaper, Diapreé Rouge.*—Fruit large, red; flesh very high-flavored; ripens about the beginning of September.

12. GREEN GAGE, *Reine Claude.*—Fruit small, round; yellowish green, where ripened upon a wall exposed to the sun becomes almost of a dark russet, and is the highest flavored plum, and most useful for every domestic purpose that we have. It ripens in September, and is both a hardy tree, and exceedingly good bearer. All the sub-varieties of this plum are good. The name of Green Gage is said to have originated by the family of Gage, in the last century, procuring from the monks of the Chartreuse at Paris, a collection of fruit-trees; when these arrived, the names of all of them was affixed upon them, except the Reine Claude, the name of which had been lost in the passage. The gardener, being from this circumstance ignorant of the name, called it, when it bore fruit, the Green Gage, from its green color and the family in whose possession it was.

13. GREEN GAGE, ISLEWORTH.—A seedling of Wilmot's, of that place.

14. LITTLE QUEEN CLAUDIA.—Fruit small; whitish yellow and red; flesh rich; ripens in September.

15. LA ROYALE.—Fruit middle-sized, roundish; light red; whitish within; nearly equal to the green gage; ripens about the end of September; is rather a shy bearer.

16. CHESTON, or *Matchless.*—Fruit middle-sized, oval; dark blue; flesh rich; great bearer; ripens about the end of September.

17. DRAP D'OR, *Cloth of Gold.*—Fruit small, oblong; yellow; flesh very high-flavored; ripens about the end of September; is a great bearer.

18. APRICOT PLUM.—Fruit large; pale yellow and white; flesh sweet; is ripe in October.

19. MAITRE CLAUDE.—Fruit large, round; whitish; flesh sweet; an excellent fruit; ripens about the beginning of October.

20. LA MIRABELLE.—Fruit small; amber coloured; flesh juicy and very sweet; is a great bearer; and is ripe in September or beginning of October.

21. ST. CATHERINE.—Is one of our best plums, either for the dessert or culinary purposes; flesh juicy and sweet; a great bearer; hangs longer upon the tree than any other. It is frequent in gathering for six weeks together; ripens about the end of September.

22. LARGE WHITE DAMASK.—Fruit middle-sized, oval; pale yellow; flesh firm and well-tasted. Tree great bearer; ripens about the beginning of October.

23. PRUNELLE.—Fruit small, long-pointed; white; chiefly used for drying; ripens in October.

24. GOLIATH, *Nectarine, Caledonian.*—Fruit very large. Hardy free growing tree. Ripens in October.

25. DAMASCENE, *Black Spanish,* or *Prunes.*—Not often cultivated. Is a useful fruit.

26. DAUPHINE GAGE, or *Great Queen Claudia.*—Fruit small, round; yellowish green; flesh rich and musky; an excellent plum; ripens in September or beginning of October.

27. BLUE IMPERATRICE, or *Violet.*—Fruit small, oval; dark colored; hangs long on the tree; flavor fine; is one of our best late plums; ripens in October.

28. COE'S GOLDEN DROP, *St. Edmund's, Bury, Coe's, Coe's Imperial, Golden Drop, New Golden Drop,* and *Bury Seedling.*—Fruit large, oval; yellow; flesh firm, juicy, and high-flavored; keeps till the end of December; one of our most valuable late plums; is a good bearer; and ripens about the middle of October.

29. **Coe's Fine Late Red.**—Fruit nearly equal to the last.

30. **Precoce de Tours.**—Fruit very large, coarse-skinned, and harsh; useful for culinary purposes; a great bearer; ripens in October.

31. **Red Magnum Bonum**, *Red Imperial.*—Fruit large, egg-shaped; red; when well ripened an excellent fruit; at all times useful for culinary purposes.

32. **White Magnum Bonum**, *White Imperial.*—Fruit large; egg-shaped; yellow when well ripened; an excellent fruit; luscious and showy; extremely useful for preserving; ripens in October; great bearer; deserves a wall in most situations.

33. **Dapier Blue**, *Violet Dapier.*
34. **Damask Violet.**
} Both good plums; ripen in October.

35. **Wentworth**, *Monsieurs.*—Fruit large, resembling the white imperial; an excellent plum for culinary purposes, is too sharp to be eaten raw; ripens in October; is a great bearer.

36. **White Imperatrice.**—Resembling the blue imperatrice, except in color.

37. **Blue Gage.**—Inferior to the other gages, but a good plum, and a good bearer.

38. **Damson**, the *Shropshire Damson*, or *Prune Damson* is the best.—It is propagated either by sowing the stones, or by suckers from the roots. Excellent for preserving; ripens about the end of September, and continues in use as long as uninjured by frost.

39. **Bullace**, (*Prunus Institia.*)—Fruit small, round; green, black, and white; the fruit used for culinary purposes. Tree hardy, and a great bearer; is not fit for the dessert.

40. **Muscle.**—Used for the same purposes as the above.

41. **Wine Sour.**—A Yorkshire fruit. Fruit somewhat small, oval; singular flavor, rather agreeable when over-ripe, and shrivelled. It is generally used for preserving; great bearer, and tree hardy.

42. **Damson**, *Common Damson.*—Much used for preserving; great bearer; and lasts upon the tree for some time after it is ripe. Ripens in October.

43. **Damson, White.**—Inferior to the last sort; ripens at the same time.

44. **Golden Gage.**—Inferior to the green gage; a good bearer; ripens in September.

45. **Downton Imperatrice.**—Originated by Knight, about 1823, from a seed of the White Magnum Bonum, and the pollen of the Blue Imperatrice; resembles the Blue Imperatrice in shape, but is rather larger, and not so much lengthened at the stalk end. Skin thin; color dull yellow; flesh also yellow, soft, and juicy; stone small and flattish.

CHERRIES.

Cherry, *Prunus Cerasus, Linnæus,*—belongs to the class and order *Icosandria Monogynia*, and are arranged in the natural order *Rosaceæ.*

Is considered by Botanists as a native of Britain, and entered in all our British Floras as such. The cultivated cherry is a native of Asia and Europe, and was brought by the Romans into Italy from Cerasus, a town in Pontus, 73 years before the birth of Christ; and was introduced by them into this country 120 years afterwards. Some suppose, that those introduced by the Romans were lost in this country, and that they were again introduced by the fruiterer to Henry the Eighth. Lidgate, a poet of the fifteenth century, says, that they were exposed to sale in the streets of London before his time, much in the same way that they are at present. The gum which exudes from the stem and larger branches, when wounded, is considerable, and resembles gum-arabic; it is supposed to be very nutritious. Hasselquist says, that more than a hundred men were preserved from starving, during a long-protracted siege, by letting small pieces of this gum dissolve gradually in their mouths; and that they lived nearly two months upon no other nourishment.

There are many kinds of this fruit cultivated; and the wild varieties are very numerous, as they are yearly propagated from seed. The Romans were acquainted with eight sorts. Tusser, in 1573, mentions red and black. Parkinson, in Charles the First's time, mentions 34 sorts; and Philip Miller 18 sorts. The nursery catalogues of the French and English cultivators include from 50 to 80 names. That of the Horticultural Society enumerates 246 varieties; of these 111 only are considered as cultivated in the British gardens; and of that number, nine are considered varieties of Morello, four black-hearts, four May Dukes, and four white-hearts. The French divide their cherries into three classes: *Bigarreaux*, or hard-fleshed ones; *Griottes*, or tender-fleshed ones; and *Guignes*, geans or small fruits. We in general only make the distinction between cherries and geans: the former including what the French make two classes of.

1. May Duke.—Fruit middle-sized, round; red; flesh soft and pleasant; one of our best and most generally cultivated cherries; upon a wall, in favourable situations, it ripens about the beginning of June. It is a great bearer, either upon a wall, espalier, or standard.

2. Early May Duke.—Is similar to the above, but much smaller, and not by any means so useful a fruit.

3. Arch-duke.—Fruit middle size, round, and lighter in color than the last. Is ripe in June.

4. Early Black.—Originated by Knight, in 1816, from the Graffion and May Duke. Resembles the Waterloo. Middle-sized, round, and pointed; black; flesh soft, not juicy. It is said to be earlier than either of the three last, but it is not, according to our experience; indeed, if any difference, under the same circumstances, we would say that it is scarcely so early.

5. Late Duke.—Can only be considered a variety of the arch-duke, which may from circumstances ripen a few days later.

6. Black Tartarian, *Fraser's Black Tartarian, Black Russian, Circassian, Superb Ditto, Ronald's Black-heart, Ronald's Heart, Fraser's Black-heart.*—Introduced from Russia by M. Fraser, Nurseryman, Sloane-square, in 1796. Fruit large, roundish; black; flesh firm; flavor good. Tree a good bearer; ripens beginning of July.

7. White Tartarian, *Fraser's White Tartarian, Fraser's White Transparent, Lady Southampton's, Lady Southampton's Duke, Lady Southampton's Yellow.*—Fruit white and transparent; flavor good; excellent bearer; and ripens with the last.

8. Black Eagle.—Originated by Knight, from the Graffion and May Duke, in 1814; the seed sown in 1806. Fruit large, rather round; beautiful dark red, covered with a delicate bloom; flesh firm, sweet, and high-flavored Tree very luxuriant and hardy, an excellent bearer, leaves unusually large. The first produce of fruits from seed is not so fine as they will be after a year or two. A striking instance of this occurred with this cherry when first presented at the table of the Horticultural Society. It was then (being in an imperfect state from want of age) thought by the Fruit Committee to be good for nothing. The fruit now rivals in richness of

flavor as well as beauty, almost any cherry that we possess. A similar circumstance occurred with the Spring Grove peach; the first fruits of which were so harsh and austere, that the original tree was absolutely thrown away, and this would have been lost to us, had not by chance a bud of it been introduced into an old tree before the original showed fruit.

9. HOLMAN'S DUKE.—Ripens in July.

10. BIGARREAU.
11. BIGARREAU BLACK.
12. BIGARREAU TURKEY.

Excellent cherries. Ripen in July.

13. ELTON.—Originated by Knight, in 1814, from the White-heart and Graffion. Fruit large, heart-shaped; flesh soft, sweet, juicy, and delicate. Tree very hardy and luxuriant; great bearer.

14. KENTISH.—Fruit middle-size; light red; agreeably acid; fit for culinary purposes; not much esteemed for the table. Ripens in July; great bearer on standards, in which way it is generally planted.

15. HEREFORDSHIRE HEART.—Fruit middle size; flesh firmer and of finer flavor than hearts in general; ripens about the end of July or beginning of August.

16. GASCOIGNE'S HEART, or *Bleeding Heart.*—Fruit very large, of an oblong form; dark color; flesh firm, and pleasant flavor; ripens the end of July.

17. HARRISON'S HEART.—Introduced from the East Indies by Governor Harrison, in 1709, and first cultivated at Balls, in Hertfordshire. Some of the trees were by him presented to George the First, and planted in Kensington fruit garden, and continued above 100 years to produce excellent crops of fruit.

18. CARNATION.—Fruit large, round; red and white; flesh soft, not sweet; showy fruit; ripens the end of July.

19. BLACK HEART.—Fruit rather large, heart-shaped, and very black and glossy, often staining the hand while gathering it; flesh firm, sweet; much esteemed; rather shy bearer.

20. WATERLOO.—Originated by Knight from the May Duke and Ambree, or Graffion. Fruit large, conical; deep red; flesh firm and high-flavored; ripens the end of July. Tree luxuriant, and good bearer. It received its name from the eventful battle which was fought a few weeks previously to its ripening. First exhibited to the Horticultural Society in 1815.

21. CORONE, *Coroun*, *Caroon.*—Originated from seed of the *Prunus Avium*, or small-fruited cherry; an excellent fruit. Tree hardy, and a good bearer; ripens in August.
22. WILD RED-FRUITED CHERRY.
23. MERRY CHERRY OF CHESHIRE.
24. WILD BLACK-FRUITED CHERRY.
25. BLACK MAZZARD.
26. COMMON BLACK BUCKINGHAMSHIRE.
27. WILD LARGE BLACK.

These are all native English fruits, and may be cultivated in the orchard for variety; not one of them merits a wall.

28. FLEMISH.
29. LUKWARD'S HEART.
30. SHAILER'S NEW GRIZZLY.
31. YELLOW, or *Golden.*

These may be cultivated for variety. Their merits are not equal to the first 20 sorts.

32. FLORENCE. — Introduced from Florence by John Archer Hublon, Esq. in 1780. Two trees were introduced, one of which was planted in his own garden, at Hallingbury Place, in Essex, and the other at the Priory, in the same county. For the knowledge of this most excellent cherry we are indebted to Walter Calvart, Esq. of Hunsdon, in Hertfordshire, who received a young tree of it from Richard Vachell, Esq.

who found it in the garden of the Priory some years after its introduction. As the original trees are dead, this fruit might have still been unknown to us, had not Mr. Calvart presented grafts of it to the Hort. Society; in which collection it has been deservedly propagated. Fruit middle size, heart-shaped; beautiful pale red; flesh firm, sweet, and rich; much esteemed at Florence; ripens in September. Tree hardy, and a good bearer.

33. **White Heart.**—Fruit large, heart-shaped; a shy bearer; one of our finest-flavored cherries when ripe; ripens in September.

34. **Morello**, or *Milan.*—Fruit large, round; light red; becomes dark when very ripe, or on a south wall; flesh soft and acid. Ripens in September, and will keep till December. Generally planted on standards and north aspects; when planted on a south wall, or trained over the wall from the north aspect to the south, is much improved in size and flavor. It is the most useful cherry we have for culinary purposes, and is a great bearer.

GEANS

In the Horticultural Society's Catalogues are enumerated 12 varieties of this class of cherries, but there are many more cultivated in Scotland. Some of them, although very small, are extremely high-flavored. Those that are most worth cultivating, are—

35. **Black Hungarian.** } Very fine.
36. **White Ditto.** }

37. **Lundie.**—First cultivated at a seat of Lord Duncan's, near Dundee, of that name.

38. **Transparent.**

39. **White Swiss.**

40. **Castle Menzies.** — From a venerable seat of Sir N. Menzies, Bart. in Braedalbane.

41. **Large Black.**—Flesh of which is hard, and apt to crack; flavor good.

42. **Amber.**

These may be introduced into the park, where their various habits will give variety, and the beautiful red tinge which their decaying leaves assume in autumn, give a color to the landscape highly interesting.

FIGS.

Fig, *Ficus Carica, Linnæus,*—belongs to the class and order *Polygamia Diœcia,* and ranks in the natural order *Urticeæ.*

Is a native of Asia; naturalized in the south of Europe, and forms trees as large as our apples. It seldom acquires any magnitude as a standard here, although in the Isle of Wight there are some trees of considerable size. It is with us, as is the case in every part of Europe, a deciduous tree, while in tropical countries it is evergreen. The fig is supposed to have been introduced here by Cardinal Pole, in 1525, and still exists in the garden of the archbishop, in Lambeth. Some of these trees cover a space of fifty feet in height and forty in breadth. The trunk of one of them is twenty-eight inches in girth, and another is twenty-one. They are of the white Marseilles sort, and bear delicious fruit. In the garden of the Regius Professor of Hebrew, at Oxford, is a fig-tree brought from Aleppo, and planted by Dr. Pocock in 1643; bears a black fruit, and is in a thriving state. Philip Miller introduced about twelve sorts from Italy; before his time this fruit appears to have been little thought of, and scarcely cultivated. It is cultivated here merely for the dessert; but its cultivation becomes a matter of great importance to the inhabitants in fig countries, who not only derive a considerable profit by the exportation of this fruit, in the well-known form that it is met with in our shops, but also as an article of food, which they prepare in a variety of ways, both in a ripe and unripe state. There are few tables in France and Italy which do not produce this fruit in some shape or other, either fried or stewed, or as an addition to their desserts. We are supplied chiefly with our preserved figs from Spain, the south of France, Italy, and the isles and shores of the Mediterranean Sea. Figs should not be planted near meat-safes or larders, as they have the singular property to intenerate the contents sooner than may be desirable. Philips (in Pom. Brit.) relates an experiment made upon a haunch of venison, which had lately been killed, being hung up in a fig-tree when the leaves were on, about ten o'clock in the evening, and was removed before sunrise in the morning, when it was found in a perfect state for cooking. A somewhat similar circumstance occurred to a friend of ours, who had a fig-tree planted against the walls of his house, some of the branches of which were trained near the window of his pantry; during the whole of the summer he could not keep a bit of meat for many hours without its becoming almost putrescent; this occasioned many altercations between him and the butcher, till at length he betook himself to reason the matter, and being a shrewd intelligent person, removed the cause by placing the branches of the fig at a greater distance. After this his meat kept as well as it did before the fig was planted.

This tree is cultivated as a standard in those countries which produce the finest figs; and such as are standards in this country, where the situation is favorable, are much more productive than when upon walls or espaliers in equally favorable situations.

The number of varieties of this fruit are supposed to be great, but possibly far short of the number of names in our nursery and other catalogues. In fig countries they are produced from seeds so readily, that many varieties are yearly springing up. Many have been raised in this country from seeds, particularly by the late Mr. Lee, of the Hammersmith Nursery. It is supposed that there may be, as far as can be ascertained, about 25 distinct varieties worth cultivating. The Horticultural Society enumerates 75 varieties as cultivated in their gardens. It is by forming such collections of names, and by a judicious comparison of the fruits, that we are to arrive at any degree of perfection in the naming or selecting of fruits.

1. Brown Ischia.—Fruit globular, with a pretty large eye; large; pinched in near the foot-stalk; color brown or chestnut on the outside, purple within; flesh sweet and high-flavored; containing largish grains. Ripens about the end of July or beginning of August. If planted upon a hot wall, will produce two crops annually. Originally from the island of Ischia.

2. Black Genoa.—Fruit long, swelling pretty large at the top, where it is obtuse, the lower or part next the foot-stalk very slender; color dark purple, approaching to black, having a delicate bloom over it, like some sorts of grapes and plums, which is easily destroyed by handling; inside color bright red; flesh high-flavoured; ripens early in August.

who found it in the garden of the Priory some years after its in
the original trees are dead, this fruit might have still been unknow
Mr. Calvart presented grafts of it to the Hort. Society; in wh
been deservedly propagated. Fruit middle size, heart-shape
flesh firm, sweet, and rich; much esteemed at Florence; rip
hardy, and a good bearer.

33. White Heart.—Fruit large, heart-shaped; a
flavored cherries when ripe; ripens in September.

34. Morello, or *Milan*.—Fruit large, round;
very ripe, or on a south wall; flesh soft and aci
keep till December. Generally planted on
planted on a south wall, or trained over the w
is much improved in size and flavor. It is f
nary purposes, and is a great bearer.

rown;
yellow;
out the
ally.
d towards
inside color
ees, produce
at the crown;
red; ripens in
ch pinched towards
a very sweet and well-
on the tree, becomes very

In the Horticultural Society's Ca
of cherries, but there are many m
very small, are extremely high
are—

35. Black Hungarian.
36. White Ditto.
37. Lundie.—First cu
name.
38. Transparent.
39. White Swiss.
40. Castle Men
Braedalbane.
41. Large Bl
42. Amber.

These may
riety, and th
give a color

gish, globular; color light brown
nite; the inside of nearly the same
beginning of September.
rge, oblong; color dark blue or purple. Is
t long; somewhat compressed at the end; foot-
deeply divided than in most other varieties; color
inside color inclining to red; flesh high-flavored; ripens
Naples, Brown Turkey.—Fruit small; color, both outside and
nd delicious. Is of slender habits, and well calculated to force
or small boxes.
ia.—Fruit oblong, almost globular at the crown; skin thin and
een, but when ripe the purple flesh shines through the thin skin,
ppearance of being stained with purple; flesh high-flavored; ripens
ning of September.
ick, *Hanover, Madonna*.—Fruit long, pyramidal; large; outside
flesh light brown, coarse, and of little flavor; ripens about the begin-
ember.
s Perpetual.—Originated by the late Mr. Lee. Is one of the best
s we have, and should be introduced into all fig collections.
tile.—Fruit middle-sized, globular; color yellow when ripe; flesh of
e same color; ripens late, and is a bad bearer.
chia Small Brown.—Fruit pyramidal and small, with very short foot-
color brown; flesh inclining to purple; very high-flavored; ripens in Sep-
r, and is an excellent bearer.
Ischia Yellow, *Cyprus*.—Fruit large, pyramidal; color yellow when ripe;
purple, and well-flavored; ripens in September, and is but an indifferent
rer.

17. White Marseilles.—Has been long in this country. Is a good bearer,
nd high-flavored fig.

VINES.

ɴæus,—belongs to the class and order *Pentandria Mono*-
l order *Viticeæ*.
ıative of Persia, and to have migrated from Persia
. From the latter country it is thought that it found
ıd France; and is supposed to have been there cultivated
In America they possess their varieties of vines, but they
ırieties of *Vitis Vulpina*, or *Vitis Labrusca*. From the reports that
ɪved of them, they are not likely to be of much advantage either for
ɹr the press. It is a native of most of the temperate parts of the world.
y cold regions it will not grow; and within from 25° to 30° of the equinoctial
ıe it seldom succeeds so as to produce good fruit. In the northern hemisphere, the proper vine country, is from 25° to 51° north latitude, or from Schiraz, in Persia, to Coblentz on the Rhine; but some vineyards are to be met with as far north as Dresden, and in Moravia. The juice of the grape was well known to the ancients, and if not to the antediluvian world, it was soon after; for Noah, a short time after the deluge, planted a vineyard, and made wine. Vineyards were abundant, and some of them of great magnitude, in the days of the patriarchs; Solomon had an extensive one at Baalhamon, which he let. The Canaanites, and other nations through which the Israelites passed on their march towards the promised land, had vineyards, as we find mention frequently made of them in the treaties and provisions made by the Israelites for leave to pass through certain countries. Canaan was productive of grapes of an enormous size; as we find Caleb and Joshua bringing a bunch supported upon men's shoulders, to testify of the fruitfulness of the land. It has in all countries, and in the postdiluvian ages, been a favorite fruit of mankind, not only as a delicacy, but as an article of food. In temperate climates, it was eaten with bread, either fresh from the tree, or dried as raisins; and in these countries, from the fermented juice, wine was made, which is supposed to be of all other liquors the most stimulating for the stomach and exhilarating for the spirits of man. The medical properties of the vine are numerous; but whether it has been productive of most good or most harm to man, will for ever remain one of those mysteries which the reasoning of man can never solve. The vine is very rich in its products. The celebrated Hampton Court Hamburg, has been known in one year to produce 2,200 bunches, of nearly a pound each, making in all nearly a ton weight, and is above a hundred years old, and covers a space of above 116 square yards; another at Valentine's, in Essex, covers 147 square yards, and has produced a weight of fruit nearly equal to that at Hampton Court. There is one of the same variety as that first mentioned in our catalogue, in the royal gardens at Cumberland Lodge, of nearly the same dimensions, and produces crops equally abundant. The durability of the timber is great, and instances have occurred of the stem acquiring a size sufficient to admit of planks being cut out of them fifteen inches broad; and one lately dead in Yorkshire, measured four feet in circumference. The branches also grow both rapidly, and extend to a great distance from the stem. In the hedges in Italy, and other wine countries, they overtop the highest growing trees. The fruit, under good management, acquires a great size and weight; bunches of the Syrian, one of our largest grapes, have been grown in this country, weighing nearly twenty pounds; and the same variety in Syria has

been known to exceed forty pounds weight. It is supposed to equal, if not to exceed, the oak in longevity; four and six hundred years being given by Pliny and Bosc, as its ordinary age. The Burgundy vineyards are many of them four hundred years old; and many of those in Italy are still flourishing, which are known to be above three hundred. Vine-growers reckon the vine young at one hundred years; and many of those in England, still in prosperity, are equally old.

At what period the vine was introduced into Britain is not exactly known. It is, however, generally admitted to have been brought from Italy by the Romans; and if not so early as the days of the Romans, it was afterwards introduced by the religious hordes who visited this country, either for the purpose of the conversion of its inhabitants, or more probably in search of an asylum from the persecutions of some of the Roman emperors. Tacitus, in A.D. 79, considered the soil and climate of this country unfit for the vine. However, in the third century, under the Emperor Probus, we find, not only the vine cultivated, but also wine made. It is very probable that the Roman generals cultivated this fruit, the want of which they would naturally feel; and as they introduced the cherry, and built and ornamented villas after the fashion of their own country, it is very probable that they also introduced the vine. The venerable Bede, in 731, expressly says, that there were vineyards in many places; and as the clergy from his time till the reformation assiduously cultivated fruits round their monasteries, there is every probability that they also cultivated the vine, with the use of which they were so well acquainted before their retreat and during their visits to Italy. Vines may have been neglected and ultimately lost here after the dissolution of religious houses; and as we held several French provinces in subjection in the time of the Henries, from whence wine may have been procured sufficient for the then small consumption, the cultivation of it might have been abandoned.

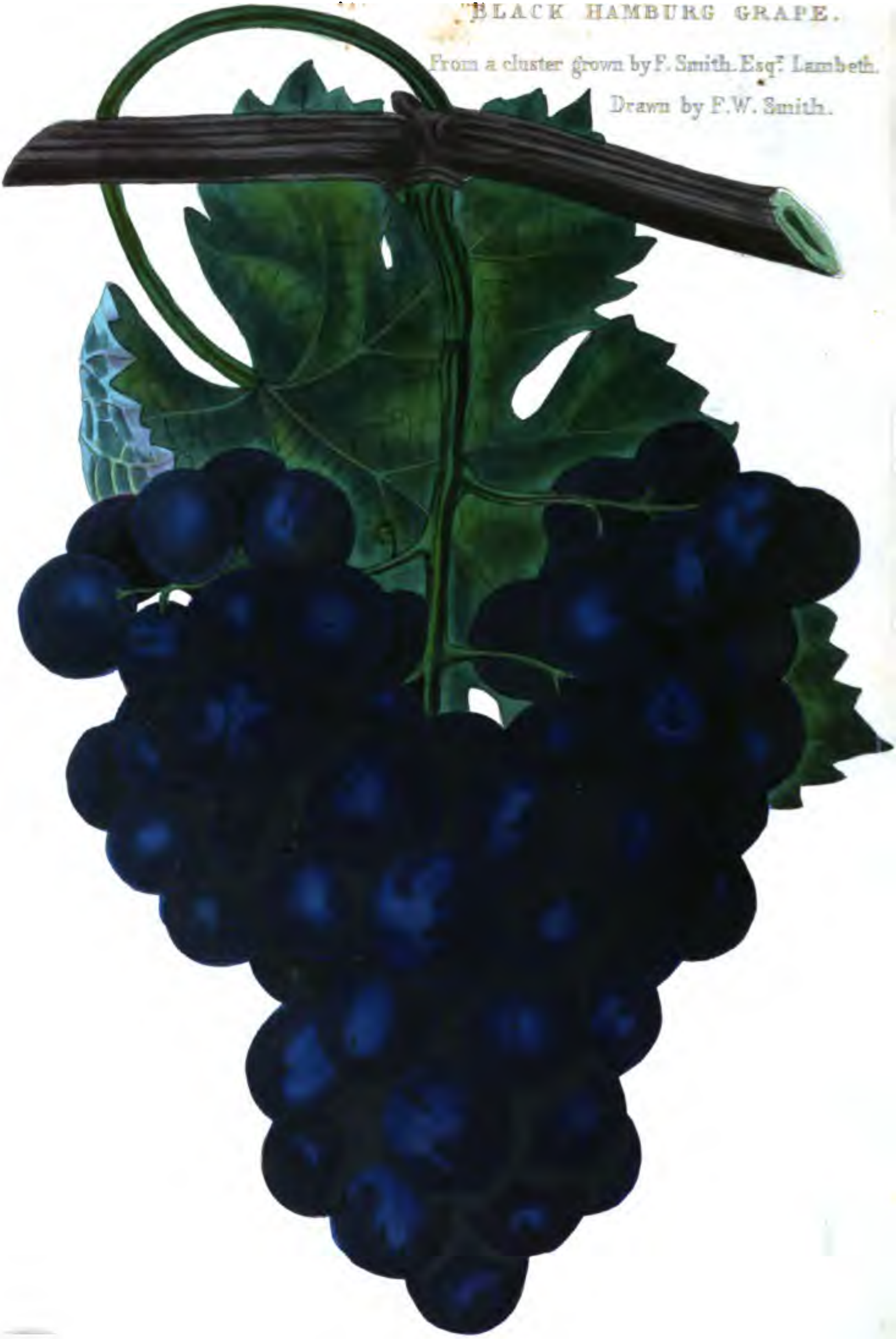
It does not appear that the making of wine in this country would be of any national importance, otherwise we might have our vineyards and wine presses as well as our orchards and cider mills. It is sufficiently proved, by repeated successful experiments, that we could produce wines in the southern parts of England as good as many of those imported. Individuals, in favorable situations, may find much real satisfaction in forming vineyards and drinking their own produce. The Duke of Norfolk had a vineyard at Arundel Castle, from which was made excellent burgundy; and Warner, with whom Warner's Black Hamburg originated, made also good wine from his vineyard at Rotherhithe. An excellent champagne was made by the Hon. C. Hamilton, at Painshill. At present, Mr. J. Kirk, of the Brompton Nursery, has a wall of 220 yards long covered with white muscadine grapes, which for many years has borne immense crops. In front of this wall are cultivated vines of the same grape upon standards, or rather trained to poles about four feet high, which, although the fruit does not always ripen, yet they bear great crops, and would produce very good wine.

The varieties of grape-vines are extremely numerous; many of them, it must be confessed, are the effect of soil and cultivation; and many kinds are kept in the British nursery gardens for supplying the British foreign possessions with wine varieties, rather than for any purpose to which they may be supposed to be applicable in this country. Tusser, in 1560, only speaks of white and red grapes. Parkinson, in 1627, enumerates 23 sorts. Ray, in 1688, says that 12 sorts were in request. Rea, in 1702, enumerates 17 sorts. In the catalogue of the Luxemburg collection, are enumerated 267 sorts. And the librarian to the botanic garden of Madrid, has described 120 sorts. The lists of both the Paris and London nurseries are very numerous; and the Horticultural Society's Catalogue enumerates 159 varieties of *Vitis Vinifera*; three varieties of *Vitis Volpina*, and five of *Vitis Labrusca;* from

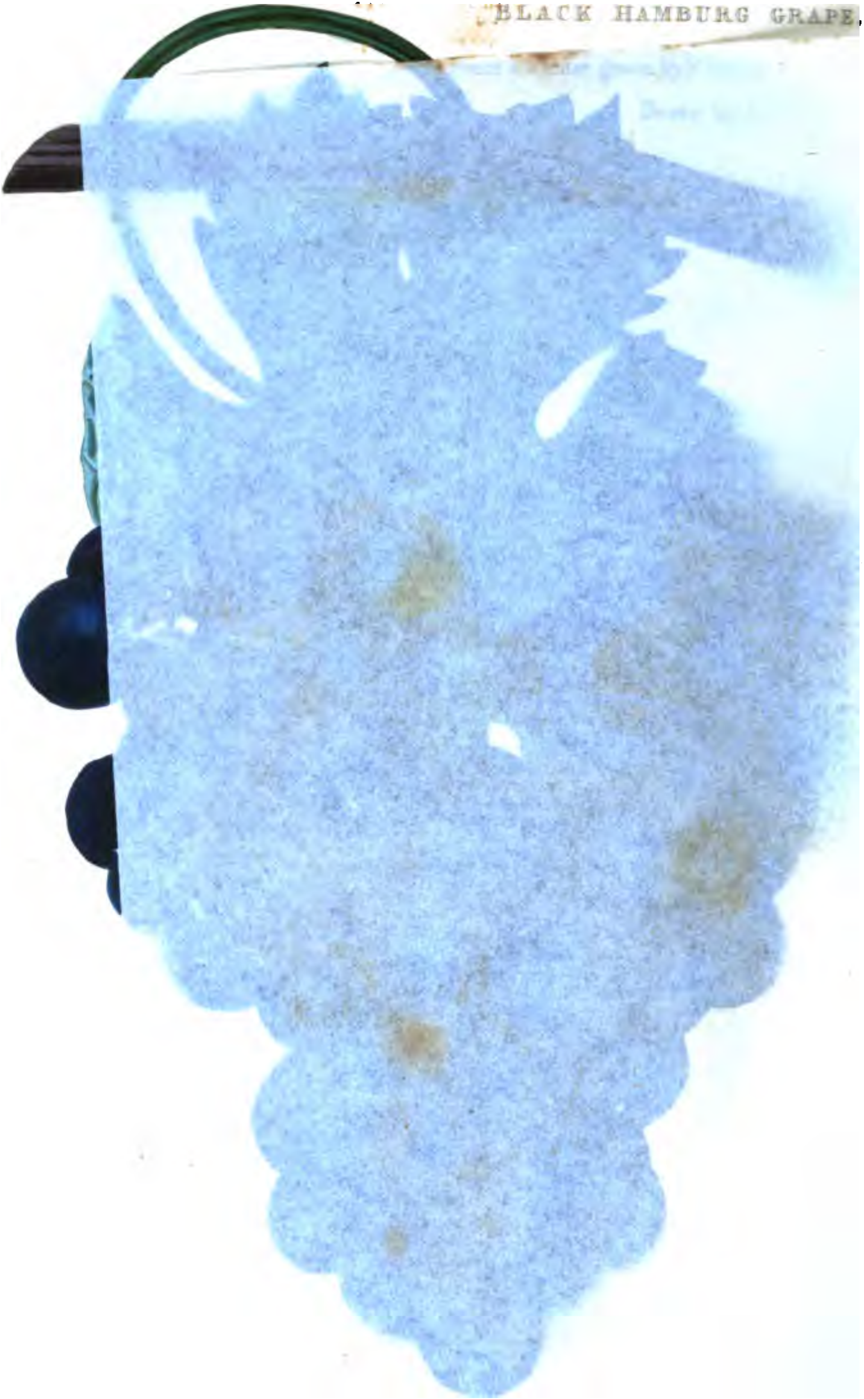
BLACK HAMBURG GRAPE.

From a cluster grown by F. Smith. Esq.r Lambeth.

Drawn by F.W. Smith.



BLACK HAMBURG GRAPE.



the two last species are supposed to have originated all the American vines indigenous to that country.

1. **Hamburg, Black (True.)**—Bunches large; berries large, oblong; color black; pleasant and vinous flavor; a great bearer, and one of the best grapes we have; on which account we have given the figure of it, preferring it to all others, as being the most universally cultivated.

2. **Hamburg, Warner's Black**, *Black Hamburg, Warner's, Red Hamburg, Gibraltar, Hampton Court Vine.*—Originated before 1730, by Warner, a gentleman of Rotherhithe. Bunches large; berry large, and thin-skinned; reddish* or dirty rose color; is a great bearer, and reckoned the best of the Hamburgs.

3. **Hamburg Purple.**—Resembles the Black Hamburg, except in color. Bunches large; berries large; color dark purple; flavor good; and a good bearer.

4. **Hamburg, White**, *Lisbon, Portugal.*—Bunches middling-sized; berries large; color white; rather an indifferent bearer.

5. **Hamburg, Brown.**—Resembling the black Hamburg, except in color.

6. **Aleppo**, *Striped Aleppo, Variegated Grapes.*—Bunches middle-sized; berries middle-sized; frequently striped black and white; flesh juicy; fine flavor.

7. **Alicant**, *Black Spanish.*—Fruit black; flavor good.

8. **Black Cluster**, *Burgundy, Auvernat, Black Burgundy.*—Originally from Burgundy. Bunches small, berries small, sitting close together; black and oval; flavor pleasant; leaves hoary; a great bearer, and good wall-fruit; seldom introduced into grape-houses.

9. **Black July, Early**, *Raisin Precoce, Madeleine, Maurillon, Madeleine Noire.*—An old variety, originally from France. Bunches small; berries small, globular, black; flavor sugary; most esteemed for being early ripe; seldom planted in grape-houses; ripens upon the open walls.

10. **Black Prince.**—Bunches large; berries very large, globular; dark brown, or black; one of our best grapes, and should hold a place in every vinery.

11. **Black Raisin.**—Originated from Languedoc. Bunches middle-sized; berries large, thick-skinned, oblong, and black; not much esteemed.

12. **Burgundy, Miller's**, *Le Meunier, Miller's, Miller's Cluster, The Miller Grape.*—Originated from seed by Philip Miller, about 1720. Bunches middle size; berries middle size, oblong, and black; flavor rough; great bearer, and very hardy; excellent wine grape; cultivated as such in 1750, in the vineyard at Painshill.

13. **Black Cluster, Large.**—Sent from Portugal in 1740, to Speechly. Bunches middle-sized; berries middle-sized, oblong, and black; flavor rough and harsh; excellent for wine.

14. **Chasselas**, *Chasselas de Fontainebleau, Chasselas Doré, Royal Muscadine.*—Supposed to have been introduced in 1660, by Sir William Temple. Bunches large; berries middle-sized; color white; and round shaped; flavor rich; an excellent bearer, and deserves a place in every vinery, particularly for late crops.

15. **Black Frankendale**, *Black Muscadine, Frankenthal.*—An old and approved variety. Bunches middle-sized; berries middle-sized, round, and black; flavor rich and juicy; is well calculated for the open walls, and is a great bearer. This is the Black Hamburg of the continental gardens.

16. **Black Damascus**, *Worksop Manor Grape.*—Bunches largish; berries large, round, and black. An excellent high-flavored grape, well calculated for late crops.

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* Soil and cultivation may probably affect the color; if so, the two first grapes are the same, as it is only in that character that they differ.

17. Esperionè, *Hardy Blue, Windsor, Turner's Black.*—Bunches middle size; berries middle-sized, round, and black; great bearer, and very hardy; brought into notice by John Aiton, Esq., of Windsor.

18. Claret, *Blood Red.*—Bunches rather small; berries small, round, and dark red, approaching to black; flavor harsh, and claret tasted; great bearer, and hardy; juice red. The leaves are used to color wines made from white fruit, such as white grapes, gooseberries, &c., and the leaves have been found to make a tolerable wine, of a red color.

19. Amiens, *Leon.*—Very hardy grape, well suited for the open walls.

20. Lombardy, *Flame colored Tokay, Brick Grape.*—Bunches large; berries largish; brick colored; flavor good.

21. Frontignac, White, *Muscat Blanc.*—Bunches middle-sized; berries large, round, and white, when well ripened approaching amber colored; flavor good. One of our most esteemed grapes for hot-houses or vineries.

22. Frontignac, Red, *Muscat Rouge.*—Bunches middle-sized; berries large, oval, and brick colored; a much esteemed grape.

23. Frontignac Grizzly, *Muscat Gris.*—Bunches small; berries middle sized, round; brownish, red, and yellow; rather shy bearer; flavor exquisite; keeps long on the tree, and often becomes shrivelled when over ripe.

24. Frontignac, Blue.—Like all the Frontignacs, of great merits, they are all rather delicate, and should, therefore, be planted in a house by themselves, and never amongst strong growing sorts, like the Hamburgs or Muscat of Alexandria, as they are apt to rob them of their due share of nourishment.

25. Frontignac Black, *Muscat Noir.*—Bunches rather small; berries middle-sized, round, and black; flavor rich and vinous; well calculated for the open walls, and equally deserving a place in the vinery.

26. Corinth, Black, *Zant, Black Ascalon, Currant.*—This is the currant of the shops. Originally from Ascalon in Palestine, and was early introduced into this country. Bunches small; berries small, round, and black; being generally without stones. The white Corinth is similar, except in color. Seldom cultivated.

27. Amber Muscadine, *common White Muscadine.*—Introduced by Sir William Temple in 1660. Bunches middle size; berries middle size, round, and white; a great bearer, and well calculated for the open wall.

28. Syrian.—Bunches very large; berries very large, long, and white. The largest of all our grapes, has been grown nearly twenty pounds weight; coarse fruit, with hard flesh, and thick skin; is a good bearer; not much in cultivation.

29. Raisin, White.—Bunches large and straggling; berries large, long, and white; good bearer; hangs long on the trees, and when fully ripe of a good flavor.

30. St. Peter's, *West's.*—Bunches large; berries middle size, round, and dark brown or black; a good bearer, and excellent grape for late crops, keeps long on the vine. Fruit ripe in October, will keep till March.

31. St. Peter's Black.—Bunches large; berries large, round, and black; juicy, and high-flavored; similar to the above.

32. White Sweet-water, New Dutch.—Bunches largish; berries large, round, and white; one of our best white grapes.

33. White Sweet-water, Old.—Fruit less in all its parts than the above; and although a good grape, much inferior to the last.

34. White Sweet-water, Grove End.—So called, having been first observed by W. Atkinson, Esq., in his garden at Grove End, its real name being unknown. The fruit ripens on the wall more than a fortnight before any other grape. The bunches are rather smaller than the Royal Muscadine, and shoulder more than the

Sweet-water. The berries are somewhat of an oval shape; of a transparent green, when forced in the house; and the seeds distinctly seen through the pulp. They take a brownish tinge, when grown upon the open walls, particularly towards the sun. The skin is extremely thin and delicate; pulp tender, sweet, and rich. Its earliness and beauty recommend it to general cultivation; and for a wall-grape, either to ripen, or make wine, few excel it.

35. **Muscat of Jerusalem, New.**—Originated by Miller, in 1738. Bunches large; berries very large; flavor excellent.

36. **Muscat of Alexandria,** *White Muscat of Jerusalem, Alexandrian Frontignac, Malaga, Passe-Musqueé.*—Bunches large; berries large; well adapted for the hot-house; flavor excellent.

37. **Muscat of Lunel,** *White Lunel.*—Bunches middling large; berries large; an excellent grape; high-flavored; and a great bearer.

38. **Black Muscadine.**—An old variety, originally from France. Bunches middling size; berries large, long, and black; flavor good; and a good bearer.

39. **Black Lisbon.**—Introduced from Portugal about 1780. Bunches large; berries large; flavor good; and an excellent bearer.

40. **Scotch White Cluster.**—Originated by a blacksmith at Edinburgh, in 1812. Bunch middle-sized; berries small, round, and white; very hardy, and a great bearer; well adapted for the open walls.

41. **Red Chasselas,** *Red Muscadine.*—Bunches large; berries small and round; an excellent grape.

42. **Verdelho.**—Bunches small; berries small, oval, and whitish yellow; flavor pretty good; plant very hardy, and well adapted for the open wall. The well-known Madeira wine is understood to be produced in that island from a variety of sorts of vines; but the Verdelho is said to abound the most in those vineyards that are most famed for the production of the best wine. It is apt to produce a quantity of small seedless berries intermixed with the others, and therefore appears to be defective in the parts of fructification, and accounts for its not setting freely. The fruit is peculiarly acid till it is fully ripe, and then the flavor is rich and saccharine. Introduced by John Williams, Esq., of Pitmaston, about 1807.

43. **Malvoisie,** *Blue Tokay.*—Berries small, powdered with a blueish bloom; flavor vinous.

44. **Muscat of Alexandria, Red.**—Bunches large; berries large, oblong, reddish; flavor rich, musky, and vinous. Like all the other Muscats, requires a hot-house to bring it to perfection.

45. **The Kishmish Grape.**—Introduced by Mr. Oldaker from St. Petersburg, in 1812, and cultivated at Spring Grove. Is said to be a native of the island of Kishm, or Kishmish, in the Persian Gulph. A very diminutive grape, the bunches seldom exceeding five inches in length, the berries little larger than white currants; of a greenish tint, but becoming ultimately of an amber hue. Their flavor is indifferent, and the berries free of seeds. It is curious and extremely pretty, and has a good effect when cultivated in pots, and carried to the table loaded with its strange-looking fruit.

46. **Variegated Chasselas.**—Originated by T. A. Knight, Esq. prior to 1812. This variety sprang from a seed of the White Chasselas and the pollen of the Aleppo Grape, which readily variegates the leaves and fruit of the offspring of any white grape. Bunches middle-size; berry small, sometimes striped with green; natural color black; leaves green during summer, but become towards autumn beautifully variegated with red and yellow, particularly if planted in a light soil, or in pots. Plant very hardy, adapted for the open walls, and is a great bearer; flavor inferior,

but well adapted for making wine. Fruit keeps long after it is separated from the tree, by being hung up in a dry room.

47. **Wantage Grape.**—The original plant was discovered by Mr. J. Wilmot growing against the wall of a house at Wantage, in Berkshire, where it had been raised from the seed of a dried raisin some years ago. It is a hardy grape, and well calculated for the open walls. The bunches are large; berries nearly round; color approaching that of the Grizzly Frontignac; of an excellent flavor, and a great bearer.

48. **The Alexandrian Cioutat Grape.**—Originated by J. Williams, Esq. prior to 1820, from seeds of the Parsley Grape and pollen of the White Muscat of Alexandria. The fruit has all the fleshy firmness of the Muscat of Alexandria, but has none of the perfume. The plant is a great bearer, and grows with great vigour. The berries, however, set thin on the bunch, but it possesses the good property of keeping without withering or rotting on the bunch much longer than any other grape. It has been known to have kept for three months after disengaged from the plant; namely, from January till April.

For the description of the last four sorts we are indebted to the Transactions of the Horticultural Society.

MELONS.

Melon, *Cucumis Melo*, *Linnæus*,—belongs to the class and order *Monœcia Monodelphia*, and ranks in the natural order *Cucurbitaceæ*. The native country of the melon is not known. It has been cultivated in this country since 1570, and brought here from Jamaica. The varieties of melons are very numerous; every gardener has his favorite sorts, suitable for the purposes for which he grows them; some prefer large showy melons, and others prefer small high-flavored ones. Small melons are almost always best flavored, and for the most part the greatest bearers. The English melons most in cultivation are—

1. BRAZILIAN.
2. BUCHARIAN.
3. EARLY CANTALOUP.
4. EARLY ROCK.
5. EARLY POLIGNAC.
6. BLACK ROCK, LARGE.
7. DO. SMALL.
8. DO. LORD VERNON'S.
9. MONTAGUE CANTALOUP.
10. NETTED CANTALOUP.
11. ORANGE CANTALOUP.
12. CITRON.
13. SCARLET-FLESHED, NETTED.
14. PINE-APPLE.
15. GREEN-FLESHED.
16. GREEN-FLESHED, EGYPTIAN.
17. DO. ITALIAN.
18. NETTED SUCCADA.
19. VALENTIA, or *Winter*.
20. NUTMEG.
21. HARDY RIDGE.
22. HARDY SCARLET FLESHED.
23. LEVANT.
24. GOLDEN ROCK.
25. SCARLET ROCK.
26. SILVER ROCK.
27. ROMANA.
28. SCARLET-FLESHED, SMOOTH.
29. GREEN-FLESHED IONIAN CANTALOUP.

The **Winter**, or *Valentia*, is much cultivated in countries bordering on the Mediterranean Sea, particularly in the orange gardens in Toulon, from whence the Paris market is supplied. It has been lately introduced here by the Horticultural Society, but is not likely to be much cultivated.

The **Montague Cantaloup.**—The Montague Cantaloup originated by Mr. D. Anderson, gardener to Lord Montague, at Ditton Park, in 1815. Pine-apple, Green-fleshed, Scarlet Rock, and Scarlet-fleshed, are the highest flavored; but of these, as well as the others, many very indifferent sub-varieties are in cultivation, in consequence of sufficient care not being paid to keep them from being impregnated while in flower by others of more indifferent properties. It is a difficult matter to procure good seed in the first instance, and difficult to continue it good, particularly where many sorts are grown in the same garden. Two or three good varieties are as much as should be cultivated where the flavor of melons is an object; and, when once procured, should be carefully preserved. The French melons are not superior to those described above; but the Persian melons have long been celebrated for their excellence. Few, however, of them had found their way into Europe, until within these few years, and that has been accomplished by the exertions of the Horticultural Society. These melons differ remarkably from those commonly cultivated in Europe. They are altogether destitute of the thick hard rind, which renders one-half of some of our finest melons useless, and are protected only by a skin so thin and delicate, that they are subject to injury from causes, which would produce no perceptible effect upon the melons of Europe. Their flesh is extremely tender, rich, and sweet, and flows copiously with a cool juice which renders them still more grateful. They are also abundant bearers, and their fruit is extremely beautiful. They are, however found difficult to cultivate, as they require a very high temperature, a dry atmosphere, and a very humid soil. They, however, will not endure any undue supply of water over their leaves, for if too freely given, it will bring on spotting and canker; and in such cases, the plants often perish before they perfect their fruit. The Persian gardeners cultivate them in the open fields, which they take care to have intersected in every direction with small streams, between which beds are raised, richly manured with pigeons' dung, upon which the melons are planted. The climate being favorable, the Persian cultivator has only to guard against any scarcity of water, and a trifling regulation of the vines as they proceed in growth. With us the case is different; the ventilation, heat, and water of our hot-beds, or other artificial agents, are operating in opposition to each other. Those who have succeeded most in the cultivation of these fruits here, have supplied their roots abundantly with water, without giving them any over head; and by keeping up a high temperature, by strong linings, have been enabled to admit a considerable degree of ventilation. Care must be taken to guard against damp, and when that appears, should, if possible, be removed; and if the vines be injured by it, apply hot lime in powder to the part affected. The fruit, when set, should be placed upon tiles or bricks, as is often practised with our best European melons. Probably training them upon a trellice would admit of copious watering at the roots, without injuring the leaves and shoots with damp.

30. **The Dampsha**, or *Zamsky*.—A rather curious fruit, of a nearly cylindrical form; said to be of excellent flavor, and will keep for some months hung up by the stalk, or in nets in a dark room.

31. **The Ispahan**, or *Sweet Melon*.—Is also recommended as a good fruit.

32. **Keiseng Melon.**—A beautiful egg-shaped fruit, about eight inches long by five wide in the middle; color pale yellow, beautifully netted all over; flesh nearly white, from an inch and a half to two and a quarter in thickness; high-flavored, and resembling in texture a well-ripened Beurré pear; rind firm, but so

thin that all the fleshy part of the fruit may be eaten. It derives its name from the village of Keiseng, near Ispahan.

33. Geree Melon.—Shape oval, and in size measures eight inches in length by four and a half in breadth; sometimes netted, sometimes quite smooth; skin mottled with dark sea-green upon a pale ground; flesh an inch and a half to two inches thick; bright green; melting; very sweet, and high-flavored. Inferior in flavor to no other melon, except the Keiseng, above noticed. Is a good bearer. The seed of this melon has been disseminated under the name of the *Ostrich Egg Melon.*

34. Daree Melon.—Resembling the last in many particulars. Is a much more abundant bearer, as well as a larger fruit. Is considered a finer fruit than the *Geree,* but less highly flavored.

35. Seen Melon.—Handsome fruit, seven inches long by five wide; shape *ovate;* surface pale dusky yellow; regularly and closely netted all over, except a small *mamelon* at the apex, which is but little marked; flesh one and a half to two inches thick; pale green, sometimes becoming reddish towards the inside; very tender and juicy. A good bearer, but late in ripening. Derives its name from Seen, a village near *Ispahan,* from whence it was procured.

36. Large Germek Melon.—Fruit large and handsome, weighing from five to six pounds; shaped like a depressed sphere; usually six inches deep, but varying from seven to nine inches in breadth; surface sea-green, so closely netted that it presents the appearance of *shagreen* leather; rind thin; flesh from one to two inches thick, green, becoming paler towards the inside; firm, juicy, rich, and high-flavored; ripens early both in this country and Persia. It is very prolific, and the fruit is the largest Persian melon we have in this country.

37. Small Germek Melon.—Ripens about a week before the last, which it resembles in figure, but is by no means so fine a fruit, and is an indifferent bearer. The vines being tender, are apt to die before the fruit is ripe.

38. The Green Hoosainee Melon.—A handsome egg-shaped fruit, five inches long by four broad; when ripe, of a fine, even, light green color; regularly netted surface; the side most exposed becomes of a rather yellowish color; flesh pale greenish white, tender, and delicate; full of a pleasant sweet juice. Is a great bearer, and as hardy as any of them, except the Germek.

39. The Striped Hoosainee Melon.—Very handsome fruit; and is an excellent bearer; of an *ovate* figure, measuring from five to six inches in length by four or five inches in breadth at the widest part; flesh white, crisp, juicy, and sweetish, but not high-flavored.

40. The Kurchaing Melon.—A very handsome oval fruit, ten inches long by five broad; skin lemon-colored; flesh white, not very juicy, extremely delicate, but not high-flavored. Is rather an indifferent bearer; and derives its name from a small village near Ispahan.

41. The Melon of Goorgab. — An oblong fruit, about seven and a half inches long by four and a half broad; of inferior qualities to any of those already noticed.

42. The Queen's Pocket Melon, *Early Queen, Queen Ann's Melon.* — Is a variety of *Cucumis Dudaine,* and is to be considered more a subject of ornament than utility. It is the smallest of all the cultivated melon tribe, and is of very indifferent flavor; resembling more the fruit of a Passiflora than a melon.

The description of the Persian Melons in the above list is from the Transactions of the Horticultural Society.

CUCUMBERS.

Cucumber, *Cucumis Sativus, Linnæus,*—belongs to the class and order *Monœcia Monodelphia,* and ranks in the natural order *Cucurbitaceæ.*

Is a native of the East Indies. It abounds in many parts of the tropical world. In Egypt it is abundant, and has been so from the earliest ages; it is among the few fruits mentioned by the Jewish historian. It formed not only an article of luxury to the inhabitants of Egypt, but an article of general food, and is by them held in high esteem unto this day. The Emperor Tiberius, we are informed by Martial, in his Epigrams, and also by Pliny, was so fond of cucumbers, that he had them in his garden all the year through, by means of specularia, where they were grown in boxes, wheeled out in fine weather, and replaced in the nights, or in cold weather. It was introduced here in 1573, and is now cultivated to an astonishing extent. Those who have not seen the wagon-loads of them in Covent Garden Market, cannot but be surprised to hear of whole fields being annually covered with cucumbers, some of which have been known to furnish the London market with ten thousand bushels of pickling cucumbers in one week. In Germany and Poland barrels of cucumbers are salted and preserved in vinegar from one year to another.

The names of varieties of cucumbers are so arbitrary, that it would be of little use to attempt any thing like a description of them. Every gardener has what he calls his own, of which he is careful to keep from being impregnated with the fertilizing pollen of inferior sorts. The following are esteemed good varieties:—

1. **Flanagan's.**—Of nearly two feet in length, and of superior flavor and crispness; and is an excellent bearer.

2. **Sparrey's.**—An excellent forcing sort, originated with Mr. Adam Sparrey, late gardener to Lord Rodney. Is an excellent early forcing one, and a good bearer for general crops.

3. **Early Long Prickly.**—From five to seven inches long; an excellent sort, both as a general bearer and crisp eating fruit.

4. **Early Short Prickly.**—From four to five inches long; excellent for early forcing, and as good for ridging out for picklers.

5. **Chester Cucumber.**—The vines of this variety are disposed to climb by means of its tendrils; the leaves are smaller than any other known variety; as it occupies little room, and is a good bearer, it is calculated for early forcing in large pots or boxes; fruit from four to five inches long.

6. **White Turkey.**—Is not a great bearer, but is sometimes cultivated for some culinary purposes, for which it is thought better adapted than any of the green sorts.

7. **Fluted Cucumber.**—A Chinese variety, recommended in the Horticultural Transactions.

8. **Nepal Cucumber.**—Sent by Dr. Wallick from Calcutta to the Horticultural Society. Is of large growth, measuring seventeen inches in length, and twenty-four in girth, and weighing usually above twelve pounds. It is sometimes cultivated for stewing, but is not likely to become of general culture.

9. **Kelly's Cucumber.**—An esteemed Scotch variety, well suited for forcing in pots; is a hardy free setting sort, and handsome fruit; from six to twelve inches in length.

10. **Southgate.**—A well known cucumber round London; fruit long; fine green color; eats crisp; and is a good bearer.

11. **Moir's Cucumber.**—Long successfully cultivated by the late Moir, of the King's Road. An excellent bearer, and esteemed fruit.

PINES.

Pine Apple, *Bromelia Ananas, Linnæus,*—belongs to the class and order *Hexandria Monogynia,* and natural order *Bromelia.* Is considered a native of South America, although it is found indigenous in several parts of Africa in great abundance. Gonçalo Hernandez de Oviedo is the first person to whom we are indebted for any account of the Pine. He was born in 1478, at Madrid; and in 1513, departed for America, where he was appointed governor of St. Domingo. In that year he printed his "Universal History of India," which was printed at Seville, and in which he makes mention of three kinds of pine-apples which were known in America under the names of *Yayama, Boniama,* and *Yayagua,* but which were designated by the Spaniards under the general appellation of *Pinas.* At this period, frequent attempts were made to send the fruit in an unripe state to Spain, but they always became rotten during the voyage; afterwards it was attempted to transport the tops or crowns to Spain, but these also were destroyed during the passage.

In the year 1541, Gerommo Benzono, an Italian, repaired to Mexico, where he resided until 1555, and on his return he wrote the History of the New World, which was printed in Venice in 1568. In this work he passes a high eulogium on the pine, and declares it to be the "finest fruit on this good earth of God."

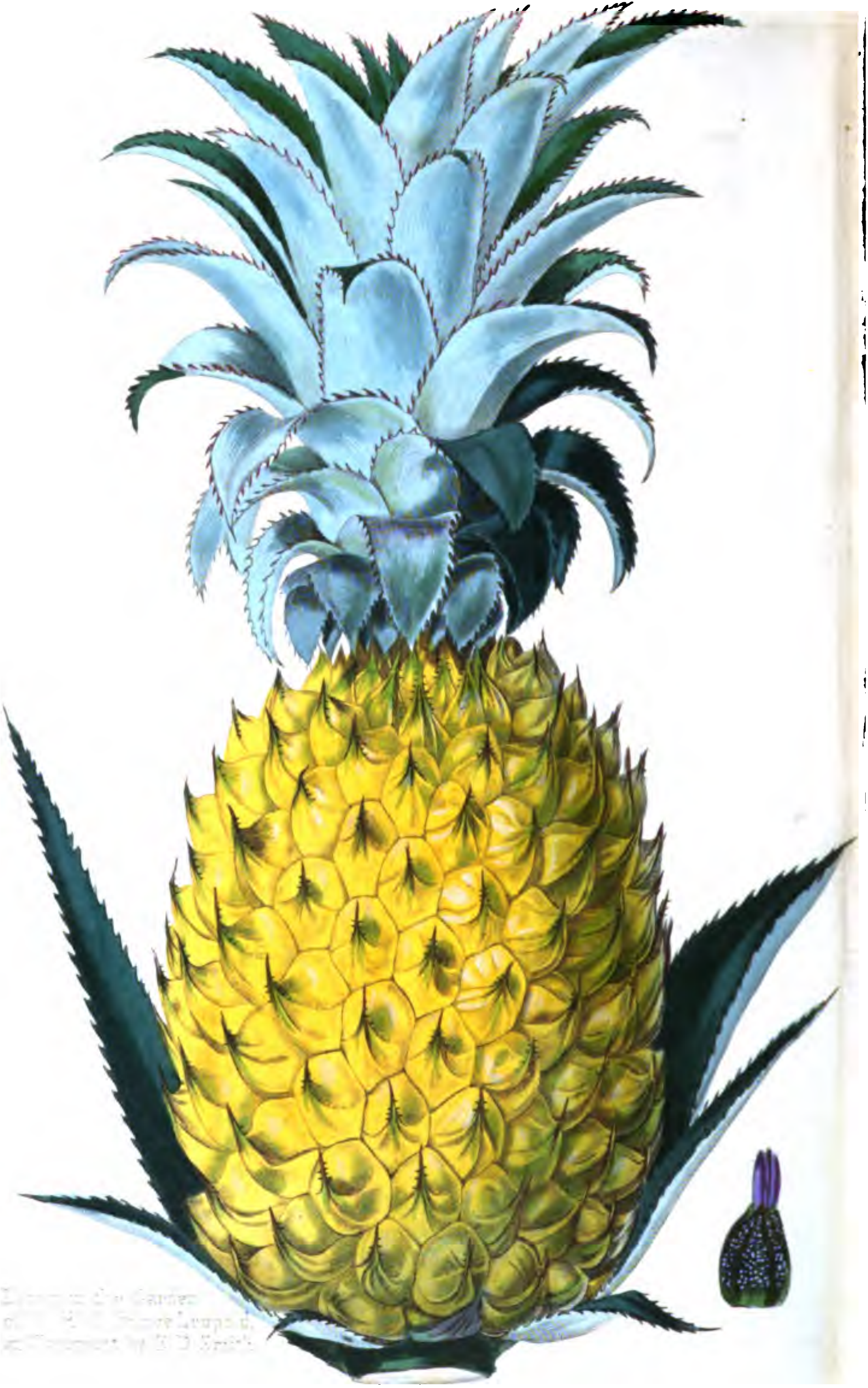
Andre Thevet, a Franciscan Monk, who resided in Brazil in 1555-56, has transmitted us a description of the Ananas under the name of *Nanas.* At that time the art of preserving them in sugar was well known.

In 1557, Jean de Lery, who went out as a priest to a colony of Huguenots in Brazil, makes frequent mention of the Ananas, and in the inflated style of those early times, he describes that to be the fruit on which the gods luxuriate, and which ought only to be cut by the hand of a Venus.

In the 16th century, Franc. Hernandez, who undertook a most expensive journey to Mexico at the charge of Philip II., at the same time that Acosta was in America, has furnished us with some good drawings of the Ananas, to which, however, he gives the name of *Matzatli,* or *Pinea Indica.*

Linnæus gives New Spain and Surinam as the native habitat of the pine; and Acosta says, that it was first sent from Santa Cruz, in Brazil, into the West, and afterwards into the East Indies. It was introduced into Europe from the West Indies by Le Cour, of Leyden, about the middle of the seventeenth century. From Leyden it came into England, and is said to have been first cultivated here by Sir M. Decker, of Richmond; and next, by John Blackburn, Esq., in Lancashire. According to the *Hortus Kewensis,* it was introduced here as a botanical plant as early as 1690 by Bentick. It was introduced into Scotland before 1732, as Justice gives a plan of a stove erected by himself, in which the pine fruited for the first time in that country, in his garden, near Edinburgh. It is now so generally cultivated, that few

THE QUEEN PINE. REDUCED



Drawn in the Garden
of H.R.H. Prince Leopold,
and Engraved by E. D. Smith.

London Published by Thomas Kelly Paternoster Row Aug. 1 1829

THE QUEEN [illegible] REDUCED 75

Drawn [illegible]

Published by Thomas Kelly, Paternoster Row [illegible] gardens are considered as complete without several departments for the cultivation of this "*king of fruits*."

In the West India Islands there are many varieties of this fruit, as might be expected where it grows spontaneously from seed. In this country many varieties have originated from seeds, some so early as the days of Miller. Speachly raised above seventy varieties in 1768, from seeds sent from the West Indies. It has been observed as a rather singular circumstance, that those fruits have produced seeds most freely that were in blossom in August, and ripened in December.

Like most other fruits of admired quality, there are many varieties in cultivation. In the pine stoves of Mr. Gunter, of Earl's Court, Kensington, there are cultivated above thirty sorts. The nursery catalogues seldom enumerate the number of varieties of this fruit. The catalogue of the Horticultural Society enumerates 95 sorts, which is by far the most lengthened list of names ever published. The following list includes all that are in general cultivation at this time.

1. The QUEEN, or *Old Queen*, to distinguish it from the next.—Fruit oval; color golden; size middling, rather large; generally under good management, attains the weight of from three to four pounds, sometimes more. Is the hardiest pine we have, and comes to its greatest perfection in much less time, and with much less trouble than any other; has been brought to perfection in the short period of fifteen or eighteen months. It is more certain of showing fruit while young, and at a proper season, than any other.

2. RIPLEY'S NEW QUEEN.—Is considered as a sub-variety of the last; is a more elegant fruit, and also fruits in an equally short time. It is more generally cultivated now than any other. We have chosen this pine for our figure, as it is the most useful sort for general purposes in cultivation; fruiting in the short space of fifteen or eighteen months, and possessing the merits of a handsome form, good size, and high flavor, and capable, with the last mentioned, of being cultivated in perfection upon beds of fermented dung or leaves in frames, with as little difficulty, and little extra expence, to that required to grow early cucumbers.

3. GLOBE, *Russian Globe*.—Another sub-variety of the Queen. It has been ascertained, that this sort was sent by Messrs. Loddige, of the Hackney Nurseries, to Russia, above thirty years ago, and has been lately re-introduced from that country, by the latter name.

4. SILVER-STRIPED QUEEN.—Plant elegant in appearance, being striped in the leaves with white, yellow, and red; is rather a shy bearer; and, therefore, not often cultivated. This is not the only variegated or striped leaved pine met with in collections; there are several others, but their merits are not sufficient to recommend them to general cultivation.

5. KING PINE, or *Shining Green*.—The leaves are of a grass green; color glossy; the pulp hard and stringy; the flavor good when fully ripe; not generally cultivated.

6. PRICKLY STRIPED SUGAR-LOAF.—Fruit cone-shaped, or pyramidal; color golden when ripe; leaves striped with black, or dark purple lines.

7. BROWN SUGAR-LOAF, or *Pyramidal*.—Fruit cone-shaped (thence the name); color dark, till it ripens, when it becomes yellow; flesh very yellow; leaves brownish.

8. SMOOTH STRIPED SUGAR-LOAF.—Similar to the prickly striped sugar-loaf, but without prickles on the leaves.

9. WELBECK SEEDLING.—Fruit small, generally broader at the head, than at the base; color pale, or sulphur; pips very flat; flesh white and tender; flavor rich, with less acidity than is found in most other pines.

10. HAVANNAH.—Color dark till it ripens; tankard shaped.

11. ST. VINCENT'S PINE, or *Green*.—Fruit middle sized, and pyramidal; when ripe, of an olive hue. This is rather a rare variety, not often met with in cultivation.

12. **Montserrat.**—Fruit middle sized, and tun-shaped; pips larger and flatter than in other pines; leaves of a dark brown, inclining to purple in the inside.

13. **Black Jamaica.**—Fruit large; and the leaves and habit of the plants resembling the following one.

14. **Black Antigua.**—Fruit shaped like the frustum of a pyramid; pips large, often an inch in diameter; size large, attaining the weight of from three to four pounds; color dark till it ripens; very juicy, and high flavored; leaves of a brownish tinge, and drooping at their extremities, with strong prickles thinly scattered upon the edges of the leaves.

15. **Providence**, or *New Providence.*—Of this there are two varieties, the white and green. Fruit much larger than any that are cultivated in this country; shape pyramidal; color at first brownish, but when ripe of a pale yellow; flesh yellow and juicy. This is a valuable fruit, but requires generally three years, and often four, to bring it to maturity.

16. **Old Providence.**—A very different and inferior fruit, originally from one of the Bermuda islands of that name; not generally cultivated.

17. **Envell.**—An excellent pine; attains a large size; and is of good flavor.

18. **Blood Red.**—Fruit equal in bulk at both ends; pips of moderate size; color brick red; flesh white and opaque; flavor inferior to most others, and is cultivated more for curiosity than any real merit; leaves of a changeable hue; appearance rather sickly than otherwise.

STRAWBERRIES.

Strawberry, *Fragaria, Linnæus*,—belongs to the class and order *Icosandria Polygynia*, and ranks in the natural order *Rosaceæ*.

Botanists have disagreed, whether the several sorts of cultivated strawberries, are really distinct species of the genus *Fragaria*, or only varieties of one or two species. The *Grandiflora*, or pine; the *Virginiana*, or common scarlet; and the *Chiloensis*, or *Chili*, are supposed by Knight, to be varieties of one species only, as they may be all made to breed together indiscriminately. They are natives of the greater part of Europe, particularly the North, and are found in the temperate regions of America. The fruit is held in high estimation, and is recommended to people of gouty, and rheumatic habits. Patients afflicted with stone, have found much relief from eating them largely; and it is supposed by some, that the name Fragaria, is derived from *(Frangans)*, to break, as they are of efficacy in dissolving or breaking the stone; others derive the name from the fragrance of the fruit; and the English name of strawberry, from the practice of laying straw between the rows, to keep the fruit clean. Their juice dissolves the tartar of the teeth, and promotes perspiration.

They have been long cultivated in this country. The wood-strawberry must have attracted the attention of our ancestors at an early period. Their varieties till of late years, were not numerous. They appear to have attracted the notice of the Horticultural Society, soon after its formation, and to some of the members of that society, we owe not only many of our finest sorts, but also the cultivation of them upon good principles. In the lists of the last century, we had not more than 12 or 14 sorts. In the Horticultural Society's Catalogue, are enumerated 94; many of them are excellent fruits, and are only such as are cultivated in their garden. The French sorts are not included in this list, as many of them are supposed to be the same as some of the English ones. Of this list, 44 are scarlets, 7 blacks, 19 pines, 7 Chilis, 7 hautbois, 1 green, and 9 Alpines.

From this list of strawberries, we would recommend the following, as most deserving of cultivation in gardens.

SCARLET STRAWBERRIES.

1. **Old Scarlet,** or *Scarlet, Early Scarlet, Original Scarlet, Virginian, Scarlet Virginian, Orange* or *Irish (of the Dutch).*

2. **Roseberry,** *Rose, Aberdeen Seedling, Prolific Pine, Aberdeen, Scotch Scarlet.* Is believed to have been discovered by accident in the market-gardens of Messrs. John and William Cadenhead, near Aberdeen, who, from certain peculiarities noticed in it, were induced to propagate it; and in March, 1815, sent packets of young plants of it to London for sale. From this stock, the gardens in England, have been supplied; it had, however, been long before cultivated in the neighbourhood of Aberdeen, and from thence spread over many parts of Scotland. It has since been ascertained, that this variety was first raised from seed by Robert Davidson, Esq., at Aberdeen, and by him given to Messrs. Cadenhead, by whom it was named and made public.

3. **Grove End Scarlet,** *Atkinson's Scarlet.*

4. **Hudson's Bay,** *Hudson's Pine (of the Scotch Gardens), York River Scarlet, Hopewood's Scarlet, American Scarlet, Late Scarlet.*

5. **Methven Scarlet,** *Methven Castle, Southampton Scarlet.*

6. **Wilmot's Late Scarlet,** *Late Virginian, Wilmot's Seedling, Wilmot's Scarlet, Wilmot's New Scarlet, Large Virginian.*

7. **Cock's Comb Scarlet.**

The **Scarlet,** *(Fragaria Virginiana,)* is a native of America, growing in the woods of Virginia. The above seven sorts are all good fruits and excellent bearers, and are extremely well calculated for preserving, and are most of them early.

The **Roseberry,** was brought into notice about 1810, and is a good bearer, and of humble growth; is well calculated for forcing; its greatest defect is, that the leaves are often not sufficiently large or numerous to protect the fruit from the scorching sun while swelling, and the fruit lying close to the ground, is apt to get dirty, from the earth being washed upon them by rains or waterings.

The **Grove End,** originated at Grove End, Paddington, in the garden of William Atkinson, Esq., and is earlier than the last, and a much better bearer, producing its fruit upon longer foot-stalks, and consequently less liable to be spoiled with rain or watering. It is well adapted for forcing, and is both a handsome and well-flavored fruit.

The **Hudson's Bay,** is an esteemed fruit.

The **Methven Scarlet,** originated with Mr. Thomas Bishop, an intelligent gardener, at Methven Castle, in Perthshire, about twelve years ago; is a good bearer; and the fruit of the largest size; not so high-flavored as the other scarlets. An excellent preserving strawberry.

The **Wilmot's Late Scarlet,** originated by Wilmot, a market-gardener, at Isleworth.

The **Cock's-Comb Scarlet,** is a large and showy fruit.

BLACK STRAWBERRIES.

8. **Old Black,** *Black, Black Canterbury, Mulberry, Black Beacon, Black Pine, Black Turkey, Turkey Pine.*

9. **Downton,** *Knight's Seedling, Knight's Strawberry.*

The Old Black, is a fine strawberry; a great bearer; and good flavor.

The Downton, is one of our best strawberries. The fruit is large and irregular, and often assuming that monstrous appearance, called cock's-comb. The foliage is decidedly distinct from that of every other strawberry.

PINE STRAWBERRIES.

10. **Old Pine,** or *Carolina Pine, Carolina, Scarlet Pine, Old Scarlet Pine, Large Carolina, Common Carolina, Carolina Pine, Solid Fleshed, Large Pine, Scarlet Fleshed, Black Carolina, Devonshire Scarlet Pine, Miss Gunning's, Varnished, Barham Down, North's Seedling, Kew Pine, Regent's Favorite, Windsor Pine, Cock's-Comb Pine.*

11. **Surinam,** *Red Chili, Chinese, Red Pine, Sutton's Large, Red Pine-apple, Ananis,* or *Apricot* (of the Dutch), *Devonshire Scarlet, Oldaker's New Pine, North's Seedling.*

12. **Bath Scarlet,** *Bath, New Bath Scarlet, Austin's, North's Seedling, Golden Drop, Liverpool, Devonshire, Imperial Scarlet, Milne's Seedling.*

13. **Round White Carolina,** *Globe, Cone, Chili, White Chili, Carolina, White Carolina, Large Pale Chili, Large Flesh-colored Chili, Large Blush Pine, White Blush, Large White.*

14. **Keen's Seedling,** *Keen's New Seedling, Murphy's Child, Keen's New Pine, Keen's Black Pine.*

Keen's Seedling, originated about 1806, by Mr. Michael Keen, of Isleworth, from seeds sown of the large white Chili strawberry. A numerous progeny was obtained, for the most part white, and by no means well-flavored. This one in particular only was saved, and possesses merits sufficient to induce cultivators to grow it extensively, particularly for the market. Fruit round; color very fine, deep crimson, which gives it a rich appearance. The seeds project considerably beyond the pulp, and to a certain degree, defend it from bruises, and thus render it more portable than almost any other strawberry.

15. **Keen's Imperial,** *Large Black, Isleworth Pine, Black Imperial, Imperial, Large Imperial Black, Imperial Pine, Keen's Black, Keen's Large Fruited, Nectarine.*

Of these, the old pine is the best flavored; all the others are, however, good, and deserve cultivation; most of them under good management, attain a great size, and are very showy.

GREEN STRAWBERRIES.

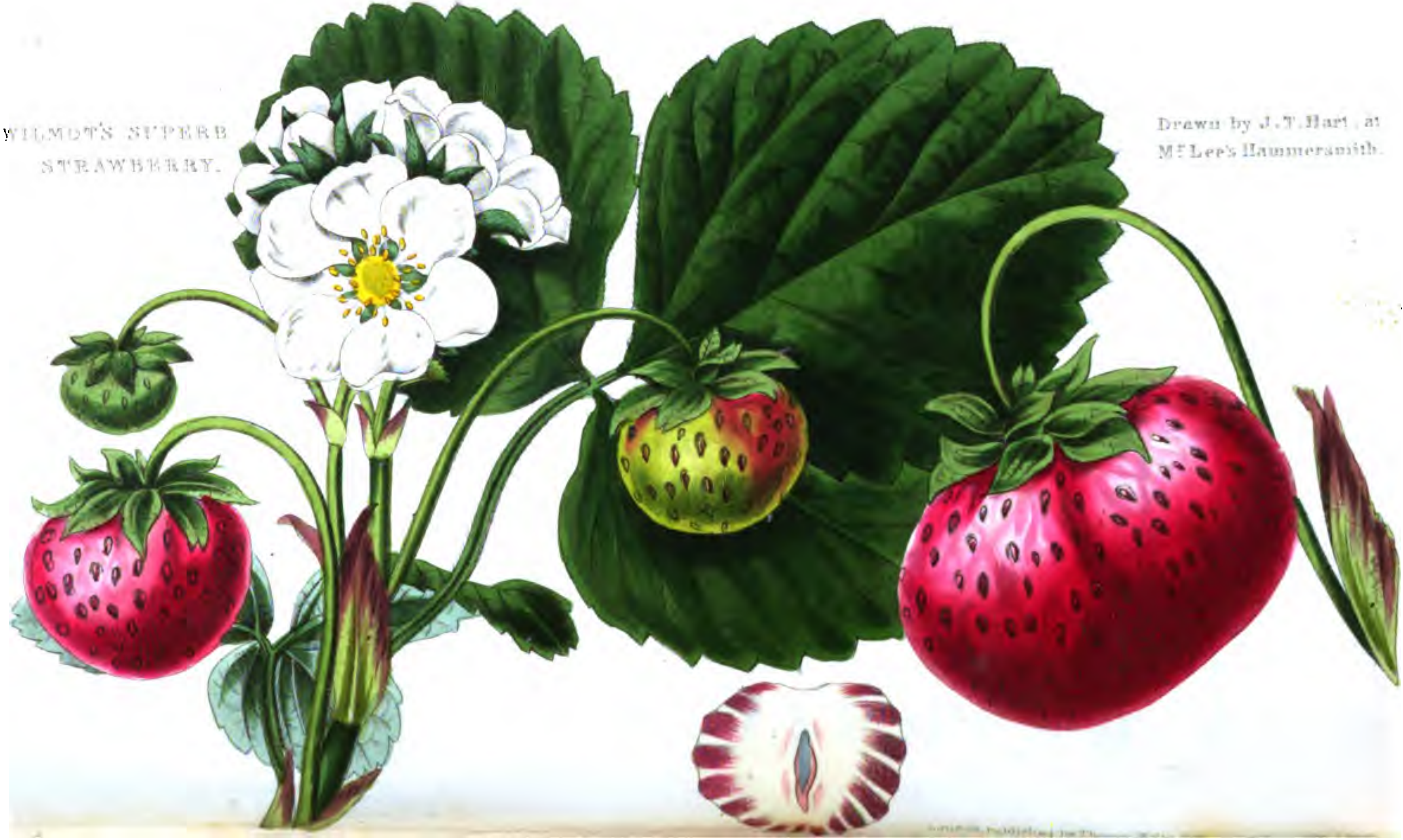
16. **Green,** *Green Wood, Pine-apple, Green Pine, Caucasian, Powdered Pine, Green Alpine.* Curious, rather than possessing any particular merit, as to flavor or productiveness.

CHILI STRAWBERRIES.

17. **True Chili,** *Patagonian, Greenwell's French, Greenwell's New Giant, Greenwell's.*

WILMOT'S SUPERB
STRAWBERRY.

Drawn by J. T. Hart, at
Mr Lee's Hammersmith.



London, Published by [illegible]

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18. **Scarlet Chili.**
19. **Large Blush Chili.**
20. **Wilmot's Superb.**—This showy fruit originated a few years ago with Mr. Wilmot, a respectable fruit-grower for the London markets. It is one of the largest and most splendid of the strawberry family; but far inferior to some of the smaller ones in flavor. Our drawing was taken by Mr. Hart, in the Nursery Garden of Mr. Lee, of Hammersmith. All the varieties of Chili strawberries are large, and abundant bearers. The last of them is an admired fruit.

ALPINE AND WOOD STRAWBERRIES.

21. **American Alpine.**
22. **Prolific Alpine.**
23. **White Alpine.**
24. **Red Alpine**, or *Scarlet Alpine.*
25. **Red Wood**, or *Common Dutch.*
26. **White Wood**, or *White Dutch.* All the varieties of Alpines are good; the last four sorts are well known, and deserve a place in every garden. The first and second varieties are excellent, but as yet less generally known. Most of them will produce fine fruit from seeds of the same year's sowing, by which means they come into bearing late in the season, when all other strawberries are over.

HAUTBOIS STRAWBERRIES.

27. **Black Hautbois**, or *New Hautbois.*
28. **Common Hautbois**, or *Hautbois, Old Hautbois, Original Hautbois, Musky, Diœcious Hautbois.*
29. **Prolific**, or *Conical Hautbois, Spring Grove, Sir Jos. Banks's, Double Bearing, Musk, Regent's, Hermaphrodite, Hudson's Bay, Dwarf, Sacombe.*
30. **Large Flat Hautbois**, *Bath, Weymouth, Formosa, White, Salter's, Louder's.*

All the varieties of hautbois are esteemed for their fine musky flavor, and such varieties as become dark, almost approaching to black when ripe, are the highest in flavor.

GOOSEBERRIES.

Gooseberry.—*Ribes Grossularia, et R. Uva-crispa, et Ribes Cynosbati, Linnæus,* —belong to the class and order *Pentandria Monogynia,* and rank under the natural order *Cacti.* It is not, however, certain to which of these, the gooseberry of the gardens is to be referred. Is a native of many parts of Europe, generally growing in thick jingly places. It is sufficiently naturalized, if not really indigenous to Britain, to be admitted into all our native Floras. It is here generally found upon old walls, and always near the habitations of man. The fruit was formerly in little esteem; still it is probable, that it was one of the first cultivated fruits in Britain. It has been, by cultivation, improved so much, that it bears, in a cultivated state, little of the appearance of the original. In no country in the world is this fruit brought to such perfection as in England, and in no part of England so much as in Lancashire; the temperate and rather humid air of that county being favorable to it. In the south of Europe it is scarcely known in cultivation, although a native of Piedmont. In France it is neglected and despised. In the more temperate and humid air of Holland and Germany, it is cultivated with considerable success; and it is probable, that in the temperate parts of Poland, Russia, Denmark, and Sweden, that it might be grown in tolerable perfection. Next to the apple and pear, it is the most useful fruit we have; as from its hardy and compact habit, few that have the luxury of a garden, of the smallest size, hesitate to adopt its cultivation; and its usual productiveness warrants its introduction into every garden. It is one of those few fruits which the cottager and artisan can cultivate to perfection, and its uses in domestic economy are so numerous, as to form a part of the food of a large portion of the public for some weeks in its unripe state; and when in maturity, it is a wholesome and pleasant refreshing fruit to every class of society. So much is this fruit esteemed in this country, that means have been devised of preserving it throughout the year, both in its ripe and unripe state. The provincial names by which this fruit is known, are various. In the north of England it is called feaberry, or fever berry; in Norfolk, fapes; and in some places it is called carberry. The sorts of gooseberries are now very numerous; for the last thirty years they have increased very much. This fruit is first mentioned in 1573, by Turner, in his Herbal; by Parkinson, in Charles the First's time, who enumerates eight varieties. Rea mentions several; and Philip Miller says that there are many varieties. The catalogues of the nurseries contain from 80 to 100 names, and the Lancashire growers above 300 varieties. Forsyth mentions, as being common, 10 sorts, and that there were 43 new Lancashire sorts in his time. The catalogue of the Horticultural Society enumerates 185. The following may be considered the best for garden cultivation, where flavor is an object. Many of them are known by the title of *Old English Gooseberries.*

White.
Champagne
Chrystal
Early
Large Early
Mountain of Snow
Walnut
Fig
Snow.

Red.
Champagne
Chrystal
Early Rough
Ironmonger
Little Red-hairy
Raspberry
Rough Red
New Ditto
Small Ditto
Small Dark Ditto
Walnut
Warrington
Wilmot's Early
Early Black.

Green.
Champagne
Chisel
Early
Early Hairy
Gage
Walnut.

Yellow.
Amber
Champagne
Golden Ball
Golden Drop
Hairy Amber
Large.

Among these, Wilmot's Early Red deserves to hold a place in every garden. It was raised by Mr. Wilmot, market-gardener, at Isleworth, in 1804, and has been cultivated by him ever since. It is the earliest gooseberry we know, being ripe in June; and for culinary purposes in May is preferable to all others. We may add to its earliness, that it is both a great bearer, and high-flavored fruit.

The WARRINGTON, or *Manchester Red*, which is an improved variety of the old Ironmonger, has long been esteemed the best dessert fruit; and the bushes assume a perpendicular direction of growth, which occupies little space.

The Red Walnut, is considered best for preserving whole, or drying.

To the above list, we will add—

White.	*Red.*	*Green.*	*Yellow.*
Royal George	Nutmeg	Gascoigne	Upright
Orleans.	Captain	Goliah	Honeycomb
	Admirable.	Globe.	Sulphur
			Conqueror
			Golden Knap.

Of these, the Green Gascoigne is much esteemed as the highest flavored of all the greens, and an abundant bearer.

The Honeycomb is the best-flavored yellow.

CURRANTS.

Red Currant.—*Ribes Rubrum, Linnæus,*—belongs to the class and order *Pentandria Monogynia,* and ranks in the natural order *Cacti.*

Is a native of many parts of Europe, and found wild in several parts of Britain; and, like the gooseberry, never far from the habitations of man. It is very probable that it has been originally imported into this country, but by whom, or when, there is no certain account. It does not appear that the Romans, who introduced many of our now common fruits, did us this service, for neither they nor the Greeks seem to have been acquainted with it. In Italy, and over most part of the south of Europe, they have not, even to this day, any appropriate name for it. From their old French and Dutch names, they appear to have been strangers imported even into those countries; and our name of currant is evidently from the great likeness of the fruit to that of the *Uva Corinthiaca,* the small grape of Zante, or the currants of the grocers. They have, however, been long cultivated in our gardens, and have sported into several varieties. They are an extremely useful fruit, either for the table or for culinary purposes; and while foreign wines were so dear during the late war, they were made into excellent wines. Their medical properties are considerable, and their fruit is esteemed wholesome and refreshing.

There are several varieties differing in color, size, &c. the principal of which are—

Red Currants.		*White Currants.*
Common Red		Common White
Large Red		White Dutch
Large Bunched Red		Pearl White
Large Dutch Red		White Chrystal
Dutch Red		Large New White Dutch.
Striped-leaved Variegated-leaved	} curious.	
Wilmot's Pale Red		
Champagne.		

Of these, the Dutch reds and whites, common red and white, and Champagne, are most worth cultivating. The Horticultural Society's catalogue enumerates 24 varieties of red and white currants, from which part of the above list is taken.

Black Currants, *Ribes Nigrum*.—Ranks in the same natural and artificial orders with the last. Is a native of the north of Europe, abounds in the woods in the north of Russia and sub-alpine regions of Siberia, where both the branches and fruit are large. It is probably an original native of this country; at all events, it is found in situations more remote from the dwellings of man than either the red currant or gooseberry. In Russia they make a palatable wine from the juice of this fruit sweetened with honey, and they also put them into brandy, as we do cherries. The leaves of the plant are a better substitute for green tea than any of the noxious ingredients usually used to adulterate that article.

The varieties of this fruit are not numerous, neither do we suppose that they are likely to be so. In the catalogue of the Horticultural Society are enumerated five varieties, probably some of them may be the same. They are, the

Wild Black Currant.—*Cassis* of the French
Black Grape.—*Ogden's Black Grape*
Black Naples
Common Black, and
Russian Green.

The common black is the only one generally cultivated.

The kinds cultivated in France appear to be the same as those above, the French names being merely translations of those used in this country.

RASPBERRIES.

Rubus, *Idæus*, *Linnæus*,—belongs to the class and order *Icosandria Polygamia*, and ranks in the natural order of *Rosaceæ*.

Is a native of Britain, and often found in woods rather moist, and almost always congregated or growing in masses together. Raspberries are recommended for gouty or rheumatic complaints. The fruit is wholesome, and the syrup dissolves the tartar of the teeth, and does not undergo acetous fermentation in the stomach.

The varieties are more numerous than has hitherto been supposed. They have not been generally distinguished by gardeners, who, it would appear, have paid less attention to them than to most other fruits. As is the case with the black currants, the French sorts appear to be nearly the same as ours, but they do not possess so many varieties.

Our lists of this fruit have not, till lately, exceeded 10 or 12 varieties; in the Catalogue of the Horticultural Society they enumerate 23, some of which possess excellent properties: of these the Antwerps, Canes, and a few others are the most generally cultivated.

Antwerps.

Double-bearing Yellow.
Late Bearing, *Knevett's Antwerp*.
Red, or *Barley*.
Yellow, or *White Antwerp*.

Canes.

Common Red, *Old Red*, *Wild Red*.
Rough.
Smooth.
Red.
Brentford.

***Double-bearing*,**

Twice, or Double-bearing, *Red Double-bearing*, *Siberian*, or *Perpetual Bearing*.
Williams' Double-bearing Red, or *Pitmaston*.

Reds.	*White.*	*Various.*
Woodward's Globe.	Old White.	Cornish.
Wilmot's Early.		Lord Exmouth.
Malta.		Prolific Early.
Taylor's Paragon, or *Scarlet Paragon.*		Superb.
		Spring Grove.
		Barnet.

Cornwall's Prolific, *Cornwall's Seedling.*—Cornwall's Red, and Large Red, are supposed varieties of the Barnet.

The twice-bearing ripens in July its first crop, and its second in October; but those of the last crop, unless in very fine autumns, seldom have much flavor.

MULBERRY.

Mulberry, *Morus Nigra,*—belongs to the class and order *Monœcia Tetrandria,* and ranks in the natural order *Urticeæ.*

The common black mulberry is the only one cultivated in the garden as a fruit-tree; but the fruits of some of the other species, especially *Morus Alba,* are sufficiently good to merit a place in a fruit-garden of the first rank. The black mulberry is, like most of our best fruits, a native of Persia, and like them have been introduced into Europe by the Romans. From the venerable specimens of this tree that are to met with in the neighbourhood of old mansions and religious ruins, we may infer that it was early introduced into this country, but at what time, or in what manner, we have no certain record. James the First attempted to establish a silk manufactory in this country, and it is conjectured that many of the old trees met with in the neighbourhood of London were planted by that monarch. That they were planted, however, by the monks, long before that period, is very certain. Tusser and Gerrard both mention them in the sixteenth century, as being then much cultivated. The fruit is very wholesome, and, like a few other fruits, do not undergo the acetous fermentation in the stomach; but it is not universally esteemed, probably owing to its being seldom produced in perfection. They are sometimes planted upon walls, in which case, they produce great quantities of fruit, and extend their branches to an amazing distance. But when situations are favorable, they form an ornamental tree upon the lawn, and afford very good crops of fruit. One or two trees will afford plenty of fruit for an ordinary family, and may be procured in the nurseries of a size sufficient to produce fruit the year after planting. This fruit has been found by Mr. Knight to be much improved by being cultivated in pots under glass, and produces crops more abundantly under such circumstances than any other tree with which he is acquainted. Its blossoms set equally well in different degrees of temperature, and the same degree of heat that will ripen the earlier varieties of grapes in the end of July, will afford perfectly ripe mulberries early in June. Dwarf-trees of this species of fruit may be readily obtained (for this purpose) by enarching upon a young stock the bearing branch of an old tree. Plants thus prepared have yielded above twenty dozen of mulberries in one season. The plants growing in ordinary-sized pots, and not three feet high.

CRANBERRIES.

Cranberry, *Oxycoccus Palustrus*, and the American species *Oxycoccus Macrocarpus*,—belong to the class and order *Octandria Monogynia*, and rank in the natural order *Ericeæ*. The former is a native of peat-bogs in many parts of the north of England and Scotland, and the latter is a native of similar places in North America. It was brought into notice by the late Sir Joseph Banks, about 1812, and cultivated by him in his garden at Spring Grove. The former species is now also occasionally cultivated in our gardens; and is collected from its natural place of growth in vast quantities. In the north of Europe, great quantities of them are yearly preserved in bottles, and sent to Stockholm, whence they are exported to different parts of the world. A great portion of them is annually brought to the London market.

NUTS.

Of nuts there are many names to be met with in the nursery catalogues; but those in the following list are by far the most useful, and are in very general cultivation :—

WALNUTS.

Tender-shelled
Thick-shelled
Highflyer of Thetford.
Round Early Oval
Double Large French.

Of these the Highflyer of Thetford and Tender-shelled are considered the best.

CHESTNUT.

Of this tree, as with all others originated by seeds, several varieties exist; some ripening a few days earlier than others, and some attaining a larger size than others. But of these none have been fixed upon by cultivators, or propagated for their respective merits.

FILBERT.

Spanish or Barcelona
Red-kernelled Filbert
White-kernelled Do.
Great Cob-nut
Frizzled.
Large Long Nut
Common Hazel Nut
Red-kernelled Do.
Cossford
Constantinople Nut.

Of these the common and red-kernelled hazel nut are well known, and often met with in great abundance in woods. The Cossford and Frizzled are noticed in the Hort. Trans. and recommended as superior sorts. The Constantinople nut is not in very general cultivation, but has considerable merit as well as all the others.

Fruits Neglected, or not in General Cultivation.

To this we may refer the Cloudberry, *Rubus Chamæmorus;* Common Bramble, *Rubus Fruticosus;* Tree Currant, *Ribes Spicatum;* Dwarf, or Artic Bramble, *Rubus Articus;* Dewberry, *Rubus Cæsius;* Snowberry, *Gaultheria Serpyllifolia,* and many of the genus *Vaccinium,* which possess great merit; and in sufficiently cold and heathy situations would amply repay the expense of cultivation.

FRUIT GARDEN.

For the following select lists of fruits for general purposes, and which may be considered a sufficient variety, under all reasonable circumstances, for a garden of the first class, we are indebted to a friend of the highest professional attainments, who has cultivated them, amongst many others, for several years. We prefer thus giving a list of select fruits actually cultivated in one garden, to a selection made in any other way; and as we have witnessed the excellence of these productions, we have the more confidence in recommending them. The list is short, compared with what many may expect; but such is the case, few tables in the kingdom are supplied with a dessert more elegant and profuse than that of the opulent proprietor from whose garden these lists are taken. This shows, by example, what may be done by a judicious selection of a moderate number of sorts of fruits in the first instance, and a proper management of them afterwards.

APPLES.

Alexander
Blenheim Pippin
*Brandsley Pippin
White Calvelle
Dutch Codlin
Keswick Codlin
*Court of Wick Pippin
*Scarlet Crofton
*Downton Pippin
French Crab
Late Fulwood
*Golden Pippin
*Russet Golden Pippin
Franklin's Pippin
Hall Door
Hawthorn Dean, White
Lemon Pippin
*Lucomb's Pine-apple
Margill
*Scarlet Nonpareil
*Ross's Nonpareil
*Russet Nonpareil
*Green Nonpareil
Scarlet Nonesuch
Northern Greening
Yorkshire Greening
Loan's Pearmain
*Padley's Pippin
Golden Reinette
Golden Russet
Ribston Pippin.

Those marked (*) are dessert apples; although many of the others are also fit for that purpose.

PEARS.

D'Auch
Gansell's Bergamot
Autumn Bergamot
Brown Beurré
Red Beurré
Beurré Du Val
Chaumontel
Colmar
Passe Colmar
Crassane
Jargonelle
Marie Louise
Napoleon
St. Germain
Bishop's Thumb
Swan's Egg.

PLUMS.

Coe's Golden Drop
Green Gage
Imperatrice
Early Orleans *(Wilmot's)*
Orleans
Magnum Bonum, White
Precoce de Tours
Sharp's Emperor
Goliath
Wine Sour (for preserving).

APRICOTS.

Breda
Brussells
Moor Park
Orange
Turkey.

CHERRIES.

May Duke
Late Duke
Black Heart
Black Tartarian
Bigarreau
Harrison's Heart
White Heart
Morella.

FIGS.

Black Ischia
Brown Ischia
White Genoa
Lee's Perpetual
Brown Turkey
White Naples.

PEACHES.

Scarlet Admirable
Double Swalsh
Early Vineyard
Red Magdalen
Noblesse
French Mignonne
Vanguard
Royal George *(smooth leaved)*
Purple Hative *(late)*
Grosse Mignonne
Millett's Mignonne
Buckingham Mignonne.

NECTARINES.

Dutilly's
New Scarlet
Roman
Voilette Hative
Vermash
Murray's
Newington
New White.

PINE-APPLES.

Black Antigua
Brown Antigua
Enville
Black Jamaica
Otaheite *(Anson's)*
White Providence
Queen.

VINES.

*Alicant
Black Prince
*Chasselas
Black Frontignac
Grizzly Frontignac
White Frontignac
*Muscat of Alexandria
Black Gibraltar
Black Hamburg
*Black Morocco
*Black Muscadel
Royal Muscadine
White Nice
*West's St. Peter's *(Oldacre's)*
Dutch *(or Sitwell's)* Sweet-water
Sweet-water *(common)*
*Black Damascus
Frontignac Musqueé.

Those marked (*) are late grapes, and consequently require heat; are, therefore, fit for pine stoves, or to be cultivated in houses by themselves.

THE
FORCING GARDEN.

INTRODUCTION.

To accelerate, as well as to cultivate by artificial means, those fruits which are natives of more temperate or tropical climates, "constitutes one of the principal branches of modern gardening:" hence it becomes necessary to form climates suitable for their growth, and these climates are formed in those erections generally denominated hot or forcing-houses. In regard to the period when the acceleration of fruits was first practised in this country, we have no certain information. Some suppose that the Romans hastened the ripening of grapes in this country under talc cases, similar to the modes used by them in Italy; while, on the other hand, it is the opinion of others, that no attempt had been made to force the ripening of fruit before the sixteenth century.

Parkinson and Gerarde both describe the practice of growing cucumbers and melons, by removing them into sheds or rooms at night, and exposing them in fine weather during the day. This seems to have been the most primitive mode, having been practised in Italy in the time of Tiberius, and probably was succeeded by merely covering with glass-cases, being in itself an improvement on the talc cases used by the Romans, as described by Seneca and Pliny. The next step towards improvement, was the use of fermenting vegetable matter in the formation of hot-beds, and afterwards of hot-walls, and lastly the construction of hot-houses, which took their rise about the end of the seventeenth century, and which are now arrived at that degree of excellence, that is not likely to be surpassed. In the time of Charles the First, melons were cultivated on beds of hot dung, without any other covering than occasionally a little straw thrown over them; and, according to Switzer and Lord Bacon, this practice had been in use for an unknown length of time.

In the time of Charles the Second, hot-houses, according to Daines Barrington, were erected, and all the fruits which we have at this day were cultivated, the pine only excepted, which was introduced in 1690. Switzer, in the beginning of the eighteenth century, not only erected hot walls, but also forcing-houses; the first plans of which, together with directions for their management, he published in 1717, in his *Fruit Gardener*. Little progress was, however, made in this branch of gardening till towards the middle of the eighteenth century, and since that time, the erection of hot-houses has rapidly increased, and their management upon scientific principles has kept pace with their increase; for which reason a garden is now considered as incomplete without several of those structures.

An invention so important as that of the erection of hot-houses, naturally led to a variety of opinions regarding their construction, and various are the ideas still entertained on this subject.

The principal points on which hot-house builders disagree are; *first*, the materials of which they should be formed; *secondly*, the form of roofs best calculated for the admission of the rays of heat and light; and *thirdly*, the way by which they should be heated.

These are the principal points on which experimental men differ, and each advocate has supported his theory with much philosophical reasoning. Houses have been built on a variety of principles, for the purpose of proving by experience their merits or defects.

These differences, although they appear specious, and afford a vast field for controversy, are considered by most practical gardeners as of far less importance to the end in view, than is willingly allowed by their several advocates; as much more depends on the proper formation of borders, and the general subsequent management, than on the simple construction of the house. We find able gardeners producing good crops of fruit in all kinds of houses, while bad ones are less fortunate; and therefore they may as well lay the blame on the construction of the house, as on their own inattention and want of skill. Nevertheless, it is allowed, that many houses are faulty, but if those be partially successful, the success must necessarily be greater, were they to be constructed on a more approved principle. However, where there is a sufficient command of fire-heat, as well as a sufficient quantity of light and air, whatever the form of the house may be, if the borders be properly prepared, and the management good, the success will entirely depend upon the experience and attention of the gardener.

SITUATION.

"It is a matter of importance," as Nicol very justly observes, "that every hot-house should be placed, if not in a sheltered situation, at least in a dry one, or in one that is capable of being rendered so by draining. The aspect of all forcing-houses should be as near to the meridian as possible, though the deviation of an hour to the east or to the west is not of much importance. Some insist that they should front the east, and others that they should front to the west of south, because some are advocates for the morning, and others for the afternoon sun." If they stand within a few points of south, it is matter of little consequence whether that inclination be to the west or east; it is, however, otherwise with houses constructed for the cultivation of plants only.

As the subject of plant-houses will be fully considered in the latter part of this work, we will confine ourselves at present to those houses which are intended for the cultivation of fruits; and, in the first place, we must observe that, for that purpose, the houses should front the south, and be completely sheltered from the effects of winds, but still not so as to be shaded by trees. Low and damp situations are, of all others, the least calculated for such structures, and the generally adopted site for them is in the kitchen-garden; although, in some instances, the forcing structures, when upon an extensive scale, as in the royal gardens at Kensington, are in an enclosure by themselves, and not unfrequently are placed in the flower or pleasure-garden, as at Sommerly, the seat of H. Baring, Esq., M. P., in which latter instance, the effect is good. However, it must be admitted, that the most convenient situation for them is the kitchen-garden, as the operations carried on, are in both more intimately connected. Such structures are generally placed against the garden-walls in a continued range, and are usually built on the ground-level of the garden. Some instances occur, where the houses are scattered about in different parts of the garden; but to this it has been objected, that they are much less conveniently attended to, and produce an appearance of confusion, by breaking in upon the regular quarters, and presenting their back-walls, which, however well covered they may be, have no inviting appearance. Houses in short ranges are more convenient for the operators in attending to them, and when seen from a proper point on entering the garden, produce a good effect. Where the soil is damp, there can be no objection to have the floor-level of the hot-houses elevated above the garden-level, by which the roots of the trees will be completely secured from under-damp, and, if not too much elevated, the houses will have a bolder effect. In long continued ranges, we have found it extremely inconvenient when they are closely connected, and therefore we prefer the mode exemplified by that eminent architect, W. Atkinson, Esq. in many first-rate gardens, by leaving a convenient space between each division or range.

MATERIALS OF WHICH HOT-HOUSES SHOULD BE FORMED.

About the beginning of the present century, in consequence of the high price of timber, various sorts of metallic substances were brought into notice as substitutes for wood. The chief advantages of metallic houses are stated to be, *durability*, *elegance*, and *lightness*. The first of which is very doubtful; the second, a matter of taste only, as numerous instances occur of hot-houses which are built of wood being as elegant, and as neatly fitted up, as any that have been erected of metal; and the third, unimportant, inasmuch as the houses hitherto constructed of wood, if done in a neat and proper manner, have been found to admit light sufficient to produce fruit as good as any that has hitherto been produced in metallic ones, without the danger attending the attraction of electrical matter, or their conducting an immoderate degree of heat or cold, either of which is extremely injurious to vegetation. A sufficient time has not yet elapsed to prove their durability to be more than that of good timber, which only should be used in erections exposed to the vicissitudes of heat and cold, wet and dry; but if we may judge from metallic matter being used in sky-lights, and other open situations, exposed to the same atmosphere, and governed by the same laws, we should decide that wooden houses, if properly constructed and kept in repair, will last as long as metallic ones, if kept equally well. Iron is not incorruptible, and it is much to be questioned, that were it placed in the same situation, whether it would remain in a state of preservation much longer than many kinds of wood. Nails are sometimes found quite decayed in old buildings, while the timber, in which they are driven, is almost as fresh as when first put up. Lignum vitæ, as well as ebony, is so durable, that scarcely any traces of decay have been discovered in either. Box is very rarely found in a state of decay. It was a common opinion in the days of Pliny, that box, ebony, cyprus, and cedar, were indestructible. The great durability of these woods arises, no doubt, from their texture, being very heavy and close-grained; water cannot be absorbed by them in any quantity, they not being sufficiently porous. We have woods in another class which are very durable, such as mahogany, cedar, yew, teak, acacia, and some species of pines, &c. These woods are of an open grain and very porous, but then, they contain a quantity of oleaginous or resinous matter, which occupies all their cavities, and therefore prevents the insinuation of any moisture. Pliny, in his Nat. His. lib. 16. c. 40, says, that the Temple of Apollo, at Uttica, the timber of which was Numidian cedar, is said to have stood 1188 years. The roof of Westminster Hall is of oak, and has stood undecayed during a period of many centuries.

The horizontal cyprus, *Cupressus horizontalis*, a native of the Levant, is said to resist putrefaction, and to last for many centuries. According to Thucydides, the coffins used by the Athenians, for their dead heroes, were made of this wood; as also the chests which contained the Egyptian mummies. The doors of St. Peter's church, at Rome, were originally made of this wood, and after lasting eleven hundred years, they presented, at the end of that time, not the least symptom of decay. They were removed by order of Pope Eugenius the Fourth, and gates of brass were substituted in their place.

The durability of the larch is now well ascertained, and when properly seasoned, it is not liable to warp, nor cast, as it is technically called; and, when of a proper age, it might be used as a durable timber for hot-house building. Its durability was known to the ancients, who describe it as lasting for nearly a thousand years.

Innumerable instances are recorded, and which daily present themselves to our notice, of the durability of *deal* timber; and when that wood is highly charged with oleaginous or resinous matter, it is known to last for many years, and is well calculated for hot-house building, as having but a slight tendency to warp or shrink, however openly it may be exposed. We are much disposed to believe timber of this description to be more durable for hot-house building, than metal of any of the sorts which have hitherto been used; and while it is exempt from the charge of being a conductor of excessive heat, cold, or electrical matter, it is also not liable to contraction nor expansion. Rust never affects it, the droppings of which on the foliage of plants is extremely injurious; neither is the expense so great in the first erection, and any accidental injury sustained in it can be more readily rectified. The capability of good timber to support any reasonable weight which is ever likely to be applied to the roofs of hot-houses, is such as to warrant, with all safety, the rafters and sashes being made sufficiently slender, to admit as much light to the plants as is ever required, on any reasonable occasion. It has been stated, that if one-third of the sum requisite to keep a wooden-house properly painted, be expended on an iron roof, no injury would ever be sustained, from the liability of that metal to suffer from rust, but this is not the case. The disposition of rust to eat its way through paint is so obvious, that we are really surprised, that the intelligent gentleman, who has promulgated the above opinion, has not been practically convinced of the fallacy of his argument. It is advised by him and by the most strenuous advocates of iron houses, to paint them every year, with the view of counteracting the effects of rust, and rendering them less powerful conductors of heat; now it is singular, that one-third of the sum will paint a hot-house of any given number of superficial feet yearly, while a wooden-house of the same surface, requires that operation at least only once in two years, and if it should even be performed only once in three or four years, little or no injury would accrue to the timber; while, during the whole of that time, we are free from the ill effects of rust, expansion, contraction, and all danger from the conducting powers of iron.

There is no example of any iron-house having yet stood thirty years, but we have seen many that have stood that time, which have been built of timber, and, according to all moral calculation, are likely to stand much longer. An instance of this occurred in our own practice, while at Stratton Park, in a vinery, which was built when that property belonged to the Bedford family; it had been long neglected, and not kept in the slightest repair, nor probably ever painted from the time it was built, till it was taken down, when it became, by purchase, the property of the late Sir Francis Baring. This vinery, however, stood for upwards of thirty years, and was by the present proprietor taken down, about ten years ago, to make way for a metallic one, which was constructed by one of the most eminent metallic hot-house builders in the kingdom; the old sashes and rafters were thrown by as useless, and remained for seven or eight years neglected. The rafters and such pieces of the building as could be wrought up into use, were taken, in consequence of the extreme good quality of the timber; and the sashes, not being so convertible into general buildings, were left to perish, as of no use. In 1825, some houses were erected for vines, and one of them was covered with those identical sashes, which had now been made about forty years. These sashes were in so good preservation, that any repair was judged unnecessary, except for greater strength. The corners were secured with plates of iron, to strengthen the joints, and so hard was the putty, that the glaziers had much difficulty in cleaning the rabbets out for the reception of the new glass.

This is not a solitary instance of the durability of wooden hot-houses, as many others could be adduced. It is, however, to be acknowledged, that from the nature of the material, and from accidental injuries sustained, at the same time that no means are taken to guard them against decay, that parts of wooden houses may show symptoms of decay sooner than iron ones; but the nature of the material also admits of their being readily repaired, which is not the case with those constructed of metallic substances. It does not often happen, but we have known an instance of a person, while in the act of repairing the roof of a hot-house, falling through one of the sashes, which was so much injured as to require it to be taken off and repaired, which was done in the course of a day; should such a circumstance, however, occur in a house of iron, could the injury be so readily rectified? The answer must be decidedly in the negative. If the sash so injured be of cast-iron, and the accident occur during winter, or while the forcing is going on, could it be remedied without its being sent to Birmingham, London, or to some part probably equally distant, for the purpose of having another cast, to replace it, during which time the gardener would be placed in an awkward situation? If the sash were made of copper, wrought iron, or of any other metallic matter, the repair to be effected would require infinitely more time and expense than if it were of wood.

Copper, or other compound metals, in consequence of their want of sufficient body in the smaller members of the sashes, are liable to yield to a slight pressure; heavy falls of snow would produce a bending in them, sufficient, not only to break much of the glass, but also to bend them hollow in the middle, and, consequently, render them less likely to throw off the rain, if it do not altogether dismember their joints.

Metallic mixtures, as iron cased with copper, produce unequal expansion, and also tend to break the glass, in consequence of a twisting in the bars. Wrought-iron is not so apt to be affected by this expansion, but is equally unfit for hot-house building, being so liable to rust.

Cast-iron is not so liable to rust as the last, neither is it so materially affected by expansion, as to cause any considerable breaking of glass, but then sashes of cast iron are less calculated to bear any degree of pressure, and are liable, in consequence of their extreme brittleness, to break off short upon any sudden blow, or pressure being put upon them suddenly; and above all, when once they are broken, they are not readily repaired without being recast, and the time lost, and the expense of the repairs, form surely a heavy balance against them. They cannot either be constructed on so slight a principle as houses of the mixed metals, or of wrought iron, and consequently are so heavy, that they will, in the end, hasten their own decay. Their weight on steep roofs is not easily supported; and when the ropes by which they are let up and down, in the process of giving air, break, which is no uncommon circumstance, their ponderous weight in falling shakes the whole fabric, and the fragments of some twenty or thirty squares of glass, bear evidence of the extent of the disaster. This we have frequently experienced, and it must be admitted that such accidents occur also in wooden houses, but the concussion is not so great, and the effect produced is seldom to any extent injurious.

That metallic houses, from a variety of causes, break more glass than wooden ones is evident. The light which supplies that herculean undertaking, the Colosseum, in the Regent's Park, is admitted by two immense sky-lights of metallic construction: during the few extremely hot days of the summer of 1827, some hundred squares of glass were daily broken by expansion; of this fact the ingenious and able projector is perfectly sensible, and being convinced, not only of the prevailing fault, but also of the attendant expense and inutility, has used nothing but wood in the erection of a range of conservatories, green-houses, and stoves, upon a scale and plan entirely unprecedented in this country. The public will soon be satisfied that houses can be constructed as elegantly and lightly, and at a much less expense, of wood, than of any metallic matter whatever. There are few of the numerous visitors, who have seen them, that have not supposed them to be iron, until informed of the contrary.

In one conservatory, Mr. Horner has adopted an ingenious plan of combining strength and lightness in the rafters. The roof is of an elliptical form, and the sashes are fixed. The rafters are composed of one bar of wrought iron, three quarters of an inch thick, and three inches broad; this bar of iron is covered with deal timber half an inch thick, and secured to the iron bar with neat screw-bolts, so that they have the appearance of being wholly of wood, and their size is consequently only one inch and three-quarters thick, and four inches deep, which has a very light and neat appearance, while it is sufficiently strong to carry the weight of the roof. If strength and lightness be really indispensable for hot-house rafters, this appears to be the principle by which it can be effected, as by being covered with wood, all the conducting powers of heat, cold, or electricity are corrected, and the effects of contraction or expansion lessened, so as to be attended with no bad consequence; and it is probable that rafters so constructed, will be more durable than metallic ones, exposed to the action of the weather. However, the expense of such rafters is considerably more than wooden ones of equally proportionable strength.

The rafters of the peach-house in the garden of the Horticultural Society are also strengthened, by having bars of iron introduced into them, in a similar way, as are the rafters in the conservatory of Mr. Hope, at Deepden; both houses are designed by William Atkinson, Esq., and in both of them the rafters are neat, light, and of sufficient strength to support any weight ever likely to be applied to them.

Metallic houses attract electricity, and to guard against this evil, it has been recommended to cover with thick coats of paint. Most painters consider that paint put on in thick bodies defeats the purpose for which it is intended, by not adhering so closely to the body on which it is placed, as thinner coats of the same material, and, instead of protecting the body of the material, is constantly peeling off. Putty is also recommended to be spread over half the bar, to lessen the conducting principle; most glaziers agree that the smaller the quantity of putty used, the less liable it is to loosen or fall off; and this is accounted for upon nearly the same principle, that thin coats of paint are better than thick ones. There is certainly no instance within our knowledge of any ***material*** injury being produced by the effects of the electric fluid, but that is no reason why such should never be the case. Accidents of that nature so seldom happen, under ordinary circumstances, that it is by no means a matter of surprise that it has not happened in the case of metallic houses, when we consider the comparative few in number throughout the kingdom.

Practical gardeners are, and have been, doubtful of the success of such houses. Abercrombie and Speechly in England, and Nicol in Scotland, excellent practical and experimental gardeners, were decidedly against them, and most others have avoided giving their opinion. Mr. Atkinson, who has designed and built more hot-houses than probably any other architect of the day, is also decidedly against them. Those who have adopted them are chiefly amateurs or philosophical gardeners; some few practical men have had the management of them, and one or two have built from their own designs. The most extensive erections of this sort are now building, under the direction of Mr. Forrest, at Sion-house. "The result of his success will, probably, tend to set the matter at rest."

ON THE FORM OF ROOFS, &c.

The form of hot-houses, till of late years, was generally that of a straight front, with sloping roofs, supported in front on a parapet wall, sometimes with and sometimes without any upright or front sashes, and differing in their angles of elevation, to suit the purposes for which they were intended, but, in most instances, they were built without any premeditated design thereto, or to that effect. Mr. Knight, however, about the beginning of this century, revived the theory of Boerhaave, Professor of Botany at Leyden, "who exemplified a principle which he laid down, for adjusting the slope of the glass of hot-houses, so as to admit the greatest number of the sun's rays, according to the latitude of the place."

This was adopted by the celebrated Linnæus, and afterwards enlarged upon by Faccio, Adanson, Miller, Speechly, and others. In 1815, Sir George M'Kenzie introduced into notice the hemispherical form of roof, as being supposed to be the form best calculated for the admission of the greatest number of the sun's rays. And this has been "considered (by some) as the ultimatum in regard to the principle and perfection of form;" while others, and by far the greater number, still prefer the sloping roof, suiting the angle of elevation to the purposes for which they are intended, and relying more upon good management, than upon nice points of philosophical reasoning, as regards the form of the house. Sufficient time has not yet elapsed, to prove the superiority of curvilinear roofs over those that are straight, as affecting the plants that may be placed under them. It, therefore, remains as yet a matter of taste only as to which of them has the best effect in garden scenery, and as taste is governed by no fixed laws, it is not likely to be speedily determined. In houses built expressly for the cultivation of exotic flowering plants, "fancy may have its full sway;" and houses for those purposes may be built upon principles of taste, with less injurious effects to the inmates; but in houses built expressly for the purpose of accelerating or cultivating exotic fruits, the principle of the design, as regards architectural beauty or taste, is of much less importance than the consideration of the end in view.

Some few curvilinear houses have been erected in this country, but they have chiefly been for the cultivation of flowering plants. Whether it be that their expense in the first erection, their inconveniency, or the effect that they produce as a garden structure, have operated as a drawback, is not certain, but they are not rising much in repute. That their expense in the first erection is considerably more than that of houses built upon the more common principle cannot be denied, inasmuch as a great part of the materials, if of wood, is cut to waste, and their formation more difficult for the tradesman to execute; and above all, if the sashes be made moveable, which should be the case with all houses, whether they be ventilated by the sashes, or by means of ventilators properly constructed, and placed both in the front parapet-wall, and likewise near the top of the back one, they are, in that case, incapable of being made rain-proof. For houses entirely constructed for cultivating flowering plants, they may, with less impropriety, be made of fanciful shapes and curvilinear roofs; but for houses expressly built for utility, they are not to be recommended. As they are constructed upon the principle of admitting the greatest number of the rays of heat and light, they also admit of the greatest portion of cold, particularly in windy weather, by allowing it to pass more readily into the house between the laps of the glass. Our own experience, in respect to two curvilineal houses for cultivating tropical plants, justifies us in joining to the testimony of others, in stating them to be decidedly more difficult to keep to a proper temperature, than houses with sloping roofs, glazed upon the same principle, and of the same dimensions. Indeed, so difficult was it to keep the required temperature in the houses alluded to, notwithstanding there were two fires constantly kept up, and the dimensions of the houses only forty feet long, by eleven wide, and one of them only ten feet high, that we were under the necessity of covering them with double mats during a great part of the winter of 1827.

The majority of practical gardeners prefer those with straight roofs, and are content with the light and heat that they afford, and if we may judge of their relative merits, by the crops of fruit produced in both, we see little reason to think that they will ever become general. Economy, combined with utility, we have always considered as a most important consideration in hot-house building, provided that they be so contrived that the plants may derive the due advantages of light, air, heat, soil, and water, these being the principal agents of vegetable life. The merits, therefore, of hot-houses will be judged by the perfection with which those indispensable agents are supplied.

In our opinion, curvilinear houses have no advantage over others for the production of good fruit; and, as a mere matter of taste, we see no elegance in them that is not to be met with in well-constructed houses with straight or sloping roofs, if judiciously arranged, either in ranges or detached. In ranges (against walls) curvilinear houses have the appearance of being unconnected, even though they may be joined; and, if detached, they as much resemble huge bird-cages as houses for the cultivation of fruits. The most convenient and economical form of house seems to be that of a straight front resting upon a parapet of brick or stone, of a proper width, and presenting an angle to the horizon suited to the purpose for which it is intended; if for late forcing, or pine-stoves, an elevation generally of thirty-five degrees will answer; but if for early forcing, the elevation will require to be more upright, to admit of the rays of the sun acting sufficiently powerful in the early part of the season, when the sun is low in the horizon.

ON HEATING HOT-HOUSES.

Hot-houses are generally heated by means of combustible matters consumed in an oven or furnace, which is generally placed behind the house, although sometimes placed in front, or at the ends. The heated air, together with the smoke, is made to pass into the house enclosed in a flue, which, for the most part, stretches along the front part of the house, at some little distance from the parapet wall. This distance is greater or smaller, according to circumstances, but the flue should always be placed as near the front as convenient, that being the coldest part of the house. As the heat naturally ascends, it is necessary that the first and greater heat should be allowed to escape as near the lower part of the house as possible, and if a sufficient heat be kept up here, it will readily heat the higher parts.

Steam, of late years, has been employed in heating hot-houses, but the expense of getting up the apparatus, and of keeping it in repair, has prevented it from being brought into general use. Upon a small scale, it is not advisable, as the expense is much greater than the more original method of heating by means of brick-built flues.

In 1792, Mr. Butler, then gardener to the Earl of Derby, was amongst the first who tried the application of steam in heating a cucumber-house, and it was the first successful attempt in that improvement. The idea, however, was suggested a few years previously by a person in Liverpool. Little notice was taken of it till 1816, when it was revived, and has since been tried in many places; in some it still continues to be used, and in others it has been abandoned, in consequence of the expense. Fuel, in most parts of the kingdom, is an expensive article, therefore the mode of heating hot-houses, so as to consume the least possible quantity, is a desideratum. "Heat is the same material, in whatever manner it may be produced, and a given quantity of fuel will produce no more heat when burning under a boiler, than when burning in a common furnace."

FLUES.

Various opinions have been entertained respecting the proper size and situations of flues, and the materials of which they should be constructed. The most primitive mode of their construction appears to have been under the surface of the borders, like drains, or in the solid walls of the house, and of large dimensions. Experience, however, soon proved the error, and we have long found them built upon more correct principles. Large, broad, and deep flues are used by the Dutch, and have been recommended by a writer in the Caledonian Horticultural Memoirs. Deep and narrow flues are used in Russia, and are often met with in this country. Can-flues have been used for a long period, but as they are rapidly heated and soon cooled, they are only adapted for moderate fires; but, judiciously chosen, they may frequently be more suitable and profitable than common flues, as for example, where there are only slight fires wanted occasionally, as in the case of a vinery with late grapes, only requiring a slight fire to dry up moisture, or repel a slight degree of frost, or where there is a regular system of watching the fires; in which case, but not otherwise, the temperature can be sufficiently regulated.

Cast-iron flues have been recommended on account of their durability, but unless they were bedded in sand or masonry, they are liable, in an extreme degree, to the same objections as can-flues. Sir George M'Kenzie, the inventor of curvilinear hot-houses, has recommended what he terms an embrasure flue, upon the principle of its exposing a greater surface of heated material in proportion to its length. It is evidently a very unsightly flue, and possesses no merit to induce our recommending it. Mr. Gowen, in the Horticultural Transactions, recommends a flue formed of bricks, which is hollowed out in the middle, and of the usual thickness at the edges; they possess the advantage over common bricks, in the more rapid transmission of heat, and being easier heated; but, on the other hand, the refrigeration takes place as rapidly, for want of sufficient body to retain the heat.

An improvement upon these bricks has been invented, and adopted by Mr. Mackay, of the Clapton Nurseries, in the extensive and convenient houses which have been built by him; the thickest part of the bricks used by him is less than that in common use, and the middle of each is hollowed out to about half their thickness; they are very neat bricks, and no doubt exists of their answering the purpose for which that intelligent and industrious cultivator has designed them. They will evidently heat the atmosphere of the houses sooner, and with less fire, which is extremely important to nurserymen; but they will, of course, be cooled exactly in the same proportion, for want of sufficient body to retain the heat. For green-houses they are admirably suited, as slighter fires are necessary for them, and their application generally requires to be more sudden to repel sudden attacks of frost; but for the forcing of fruits, where steady and uniform fires are required, we would prefer bricks of the usual form and size, which, although they require a little more fuel to heat them, when once charged with heat, they retain it equally long, and give it out gradually for a greater length of time. Tiles, as broad as the flue, or nearly so, and a foot or fourteen inches long, should be used for covers, and should be made hollow in the middle of their upper surface, for the purpose of holding water for steaming the house.

Flues should be built clear of the ground, and detached from the other walls, so that the heat may not be prevented from escaping freely from their sides. The bottom of the flues should stand clear of the floor of the house, the thickness of one brick at least, if more, so much the better, but not so as to raise the flue to an objectionable height. The sides should be built of well-formed bricks, laid on edge, closely jointed with washed lime, mixed with brick-dust, and should not be plastered either outside or inside. If the bricks be well laid, and neatly jointed, the flue will present a much neater appearance than if plastered all over. The covers may be flush with the outside of the flues, but should never project over them. If they be an inch, or even two inches, narrower than the full breadth of the flue, so as to allow of a little mortar being drawn in to fill up the angle, they will present a lighter appearance. Where only one course of flue can be admitted, the broader it is, the more heat will be given out as it proceeds, and consequently one extremity of the space to be heated will be hotter than the other; a return, or double course of a narrow flue, is, therefore, almost always preferable to one course of a broad flue.

Flues vary in size, from six inches in width, and twelve inches in height, to ten inches wide, and eighteen inches high; this should, in a great measure, be regulated by the purposes for which they are intended. The intermediate size between these may, generally, be employed in most forcing-houses; some, however, build their flues much larger, and, instead of laying the bricks on edge, lay them flat, from an idea that the greater the body heated, the longer will it be in cooling, and, consequently, continue to give out its heat for a greater length of time. This is indeed true, but then it requires an equally greater length of time, and a greater force of fire to heat them thoroughly, so that what is gained on one hand is lost on the other; and if ever the temperature be allowed to fall below what is required, flues of such dimensions will not heat the house so rapidly, as those of less size, and will likewise require a greater quantity of fuel.

Much has been said upon the subject of hot air-flues, but they are now almost very justly exploded, as being worse than useless. Nicol was at some pains to prove their inutility, and he proved it in the following manner: "The idea," he says, "of collecting the heated air from a furnace, and conducting it to the cold end of the house is just and natural enough; but if this cannot be done without conducting the tube or flue, which conveys it, upon the fire-flue, to the evident loss of its surface, and of its best part, I would ask, what is gained by the experiment, or rather, what is lost by it? Evidently a great deal: all the expense, and double the quantity of heat, that can be thus conveyed. The fact is, there is no heat comes to the far end of the house, but just what is collected from the fire-flue into the air-flue, as it travels along. None of it comes from the furnace. I had," he says, "a suspicion of these truths, and, in order to put them to the test, had tubes of various shapes, sizes, and lengths made, and which I could lay on the fire-flue, on the ground, or on a shelf, or, in short, any where I pleased. They were all fitted to the air-chamber formed round the furnace, which had a turning valve in front, three inches in diameter. That, with which most of the experiments were made, was a square tube of three inches wide formed of milled clay, and baked in the same way that garden-pots are. It was of lengths of three feet each, and joined with cement. I tried its effects in conducting the heated air from the furnace, at various lengths and at various heights; from two yards in length to forty feet, and from one foot above the level of the furnace to ten. The result of the whole amounted to this: that, unless when on the top of the fire-flue, air perceptibly hot, could not be drawn from the furnace, to a distance of more than twelve feet, even although the furnace was made ever so hot. When the tube was shortened to two lengths (six feet), the air issuing from it raised the mercury in the thermometer to 120°; but when another length was put on, though the fire was kept equally brisk, it fell to 96°; and, by adding a fourth length, (the tube being now twelve feet long,) the mercury was not affected by the air of the tube, but fell to the air of the house. The above experiment was made at six feet above the level of the top of the furnace. It was tried at two feet above it with hardly any variation; but, when laid on the ground, on the same level with the top of the furnace, the heat did not travel to the length of nine feet, so as to affect the spirits in the thermometer."

FURNACE.

The furnace recommended by Mr. Atkinson is the best, and has now been very generally in use for upwards of thirty years, and is nearly similar to that recommended by Nicol, and is of a size capable of containing less or more fuel, according to circumstances. The most usual size is thirty inches long, twenty high, and ten broad. The door of this furnace is ten inches square, with a circular valve in the centre three inches in diameter. The grating is thirty inches long, and of the same width as the door. The ash-pit is also furnished with a door of the same form and size as that of the furnace, but fifteen inches deep. The circular valve in this door is supplied with a handle to turn it by, for the purpose of admitting any quantity of air to the extent of half its diameter. The bottom of this oven is placed twelve inches at least below the level of the bottom of the flues, and is paved with fire-bricks. The walls or sides of the oven or furnace are composed of the same material, as is also the arch or roof, and fire-clay is used instead of lime. Furnaces of this description have given much satisfaction, and are sometimes of larger dimensions, particularly when wood, or wood and peat, are used for fuel, and are sometimes smaller, when coals, or coals and cinders, are used only.

Small furnaces have an important advantage over larger ones, in requiring much less fuel to heat the flues, which when fully heated or charged with heated air, the heat is shut up in them by means of a damper placed at the extremity of the flue farthest from the entrance of the fire, or where the flues terminate in the shaft for the discharge of the smoke. Flues thus charged with heated air, and prevented from escaping at the chimney-top, gradually lose their heat in the house through the bricks of which the flues are composed, and when once the whole volume of air in the house is heated to the required degree, this gradual supply from the flues will keep up the required temperature for a long time. If the doors of furnaces were made double, they would have the advantage of durability, and of preserving the heat from escaping behind, and of not so readily admitting cold air to pass over the fire, which air, of course, will be less heated, and less fit for entering into the flues, than if it entered below and passed through the body of fire in the furnace. Ash-pit doors are of *great* use, in consequence of their acting as regulators to the current of air for keeping the fire alive, or as a damper or suffocater, when it is judged necessary to extinguish or diminish the fire.

In fixing the situation of the furnace, much may be gained in point of economy in fuel, by placing them under the wall of the house, or even partly within it under the floor, instead of building it some feet behind the house, where much of the heat must of course be lost, both in the thickness of the building that surrounds the furnace, and a great part will evaporate into the sheds behind, and be entirely lost to the house. This might be dangerous if large furnaces were used; but the superiority of small ones is now sufficiently proved, that few are built of that size, that are at all likely to be attended with danger from bursting. Indeed, it is now fully acknowledged, that it is better to have two, or even three separate furnaces to a large house, than one very large one.

We consider it as very important to have the grate or bottom of the furnace placed one foot at least below the level of the bottom of the flue, to create what is practically called a *draught*, or the circulation of the heated air and smoke, by allowing it to ascend a little immediately after leaving the furnace. The chief fault of badly *drawing* flues proceeds more from a want of this precaution than from any other cause we know of. It often happens, that if the furnaces be sunk to gain a sufficient draught, that water, from the nature of the situation, becomes troublesome; but this should be effectually remedied by having a sufficient drain laid to the bottom of the furnace, to keep it perfectly dry. Without this precaution, we have often known much inconvenience to arise. Whether the furnace be placed in a shed behind or not, it is necessary to have a space on each side of the furnace, for the purpose of holding fuel and the ashes, until they can be removed; or if they be daily carried off, which is the better way, one space should be used for coal, the other for cinders, so that the operator can mix them in such proportions as the state of the fires may require. These spaces on each side of the furnace may be arched and covered over (if not in the back sheds), and the remaining space opposite the furnace, which is generally used as the means of descending to it, may be provided with a door to shut down, when the fires are not used, so as to give a neat and orderly appearance to the whole.

Where the appearance of small sheds is not objectionable, should they not be required for any other purpose, they will be found necessary appendages over each furnace, both for the comfort of those who have the attending of the fires, as well as to prevent the fires from being affected by the wind or state of the weather.

Each furnace, if at any distance from the others, should be furnished with an iron shovel and hoe, for the feeding of the fire, as well as to clear the neck from any cinders or ashes that may accumulate there, which, if not removed, would prevent the free burning of the fuel.

FUEL.

Fuel of different kinds has been used for heating hot-houses, but none are found to answer the purpose better than coal, or coal and cinders mixed. Those coals which produce the least smoke are to be preferred, and the smaller they are, the better. Wood has been often used, where coals are expensive, but from its combustible nature, it gives out its heat too rapidly, and soon burns out. Turf has been used in some places, but is also far inferior to coal. Cinders and turf are rather a better fuel, and have also been tried. Charcoal and coke are often recommended, and are of all other kinds of fuel the least accompanied with smoke.

Mr. Knight has recommended what he calls an economical fuel, and which he describes in one of his numerous papers in the Hort. Trans. as being composed "by making bricks of clay and coal-dust, in the proportion of one-third of its bulk of the former." With these, he says, he has been able to keep up a regular and high temperature at little trouble or expense, and calculates upon the ashes and burnt clay as being a valuable manure. It is not uncommon to see the peasantry in many places make balls in a somewhat similar manner, by mixing coal-dust and mud or cow-dung together. The best fuel, however, for this purpose, is the small of Newcastle coal, and this will be found the cheapest in most cases; however, coal and cinders mixed make very steady and lasting fires, and are most generally in use.

STEAM, AS APPLIED IN THE HEATING OF FORCING-HOUSES.

It is only very recently that any information has transpired on the subject of steam, applied to the heating of hot-houses, in any channel likely to meet the eye of the practical gardener; the horticultural writers have hitherto only slightly mentioned the circumstance, without entering into detail. From that valuable publication, the 'Encyclopedia of Gardening,' we extract the following: "Steam affords the most simple and effectual mode of heating hot-houses, and, indeed, large bodies of air in every description of chamber, for no other fluid is found so convenient a carrier of heat. The heat given out by vapour differs in nothing from that given out by smoke, though an idea to the contrary prevails amongst gardeners, from the circumstance of some foul air escaping into the house from the flues, especially if these be overheated or over-watered, and from some vapour issuing from the steam tubes, when they are not perfectly secure at the joints. Hence flues are said to produce a burnt or drying heat, and steam tubes a moist and genial heat, and in a popular sense, this is correct for the reasons stated. It is not, however, the genial nature of steam-heat which is its chief recommendation for plant habitations, but the equality of its distribution, and the distance to which it may be carried. Steam can never heat the tubes, even close to the boiler, above 212°; and it will heat them to the same degree, or nearly so, at the distance of one thousand, or two thousand, or any indefinite number of feet. Hence results the convenience of heating any range or assemblage of hot-houses, however great, from one boiler, and the lessened risk of over or insufficient heating, at whatever distance the house may be from the fire-place. The secondary advantages of heating by steam are, the saving of fuel and labour, and the neatness and compactness of the whole apparatus. Instead of a gardener having to attend to a dozen or more fires, he has only to attend to one; instead of ashes and coal, and other unsightly objects, at a dozen or more places in the garden, they are limited to one place; and instead of twelve pottery chimney-tops, there is only one, which being necessarily large and high, it may be finished as a pillar, so as to have the effect of an ornamental object. Instead of having twelve vomiters of smoke and flakes of soot, the smoke may be burned, by using Parke's, or some other smoke-consuming furnace. The steam tubes occupy much less space in the house than flues, and require no cleaning; they may often pass under the paths, where flues would extend too deeply. There is no danger of steam not drawing or circulating freely, as is often the case with flues, and always when they are too narrow, or too wide, or do not ascend from the furnace to the chimney. Steam is impelled from the boiler, and will proceed with equal rapidity along small tubes or large ones, descending or ascending. Finally, with steam, insects may be effectually kept under in hot-houses with the greatest ease, by merely keeping the atmosphere of the house charged with vapour from the tubes for several hours at a time. The boilers used to generate steam are formed of cast or wrought iron, or copper, and of different shapes. Wrought-iron, and an oblong shape, are generally preferred at present, and the smoke-consuming furnace most approved is that of Parke's.

" The tubes used for conveying steam are formed of the same metal as the boilers, but cast-iron is now generally used. Earthen or stone-ware tubes have been tried, but it is extremely difficult to prevent the steam from escaping at their junctions. The tubes are laid along or round the house or chamber to be heated, much in the same manner as flues, only less importance is attached to having the first course from the boiler towards the coldest parts of the house, because the steam-tube is equally heated throughout all its length. As steam circulates with greater rapidity, and conveys more heat in proportion to its bulk, than smoke or heated air, steam-pipes are, consequently, of much less capacity than smoke-flues, and generally from three to six inches in diameter, inside measure. Where extensive ranges are to be heated by steam, the pipes consist of two sorts, mains or leaders for supply, and common tubes for consumption or condensation. Contrary to what holds good in circulating water or air, the mains may be of a much less diameter than the consumption pipes, for the motion of the steam is as the pressure; and, as the greater the motion, the less the condensation, a pipe of one inch bore makes a better main, than one of any larger dimension. This is an important point in regard to appearance, as well as economy. In order to produce a large mass of heated matter, M'Phail and others have purposed to place them in flues, where such exist. They might also be laid in cellular flues, built as cellular walls. The most complete mode, however, is to have three parallel ranges of steam-pipes of small diameter, communicating laterally by cocks. Then, when the smallest degree of heat is wanted, let the steam circulate through one range of pipes only; when a greater is required, open the cocks, which communicate with the second range; and, when the utmost degree is wanted, let all the three ranges be filled with steam." This plan has been adopted by Messrs. Loddige, at Hackney, and is, we believe, chiefly the arrangement of Mr. G. Loddige.

As a means of heating upon an extensive scale, we perfectly agree with the most strenuous advocates for steam, as being the most convenient carrier of heat, as well as of its equality of distribution. We are also confident, that nothing injurious to the most tender parts of vegetation ever proceeds from steam, and that fruits and plants may be grown or cultivated in houses heated by steam, as well as in those heated by any other means, provided the general management be equally good in every other respect.

But, that steam is the most simple method of heating hothouses, or that it is more economical, either in point of fuel or erection, we are far from being singular in discrediting; neither do we think that there is any saving in labour. If ashes and coals be distributed to ten or twelve different furnaces, they are generally placed in such places that the delicate eye seldom visits; few, we believe, excepting the operatives, visit the back sheds of their gardens, where such unsightly objects are to be met with; but we have seen such places kept as clean and neat as the interior of many hothouses often are. We think the necessary care and attention, on the part of the gardener, as much required in attending the boiler and steam apparatus, as in attending to any number of fires necessary to heat an equal space, provided the furnaces and flues be properly constructed. The chimney-tops objected to (although not always the case) often are and might easily be made ornamental, as vases, &c., rather than otherwise; and if any degree of taste be exercised in their formation and distribution, they become ornamental, taking off that uniformity and stiff unbroken line, which the top of a garden-wall always presents, unless purposely broken. Arranged in such a way, they will be less offensive to the eye than a vast shaft, towering above every other object, and disgorging a volume of smoke, not much in unison with garden-scenery. Steam-pipes certainly occupy much less space in the houses than smoke-flues, which is always desirable; neither do they require any internal cleaning, which brick flues do; but they require the inspection of an engineer, or person of skill, to examine them once or twice a year; which is much more than the expense of a laborer or bricklayer cleaning the smoke-flues.

That insects are effectually kept under in houses heated by steam is not the case, it is done by good management only. Many who have had them erected have actually pulled them down and re-introduced the common flues and furnaces; and a strong proof, that they are more expensive is evident, from such eminent gardeners as Lee and Colvil, and many others, who have the most extensive ranges of houses round London, not having introduced steam. To such men as those, economy is an object, and to such practical men we are to look to for precedent, and not to gentlemen, who from motives of persuasion or scientific curiosity, adopt such projects. An eminent London nurseryman, who had his houses heated by steam at a great expense, has pulled the whole down, and substituted flues upon the general principle, but improved by his own ingenuity. He calculates a saving both of fuel and labor, taking the loss of the expense of his steam apparatus into account. Another instance of a person, long eminent for the cultivation of fruits in the neighbourhood of London, has pulled his down also, and re-introduced the original flues, being practically convinced that he has lost much by the experiment; and since the introduction of the hot-water system, heating by steam, in this country at least, may be said to be abandoned, as far as regards horticultural purposes.

It does not appear that hot-houses will ever be built in this country upon so extensive a scale, as to render the heating by steam really necessary, as a motive of economy. Where expense is no consideration, steam may be introduced into large conservatories, and be converted to many other purposes connected with domestic economy, as such buildings are usually attached to, or near the dwelling of the owner; but for hot-houses in gardens, where the extent is not infinitely greater than any that has yet appeared in this country, fire-flues, or the hot-water system, will be found much the cheapest, and will answer every purpose of heating the houses equally well.

ON HOT WATER, AS APPLIED TO HEATING HOT-HOUSES, &c.

For the invention, and introduction into practice, of this really useful and ingenious mode of heating forcing-houses, we are indebted to the ingenuity and perseverance of William Atkinson, Esq., of Grove End, St. John's Wood, a gentleman, not only eminent in his profession as an architect, but also a zealous promoter of every thing connected with horticultural affairs.

For many years Mr. Atkinson has paid much attention to the amendment of horticultural architecture, and the improvements which he has made in that department reflect the greatest credit on his talents, both as a man of science and a horticulturist. To him we are indebted for many improvements in the construction of vineries and peach-houses for general purposes, and the application of heat, by means of properly-constructed furnaces and flues.

Mr. Atkinson is not a speculative adviser upon theory only, but he possesses a considerable practical knowledge of the management of hot-houses, having reduced to practice many interesting experiments in his private garden at Grove End. Many years ago, while engaged in making experiments upon the principles of heat, it struck him that water heated was a conductor capable of being turned to account, both for the purpose of heating forcing-houses, as well as for those destined for the habitations of man.

This idea, in the multiplicity of business, had been nearly overlooked or forgotten; however, happily, his mind became again engaged in the theory, and in 1822 he had a number of models made of different constructions, and by them he proved the practicability of the theory. These models were made so as to apply to every position that it is possible for smoke-flues or steam-pipes to be applied to.

At this time, the heating, by means of hot water, was as much understood by that gentleman, and a few of his friends, to whom he explained its principles, as it is at this moment; and, as far as regards the heating of forcing-houses, he had nearly reached the climax of perfection. It would be useless to enter upon a point of controversy, as to the original inventor of this useful mode of heating hot-houses, while we are well assured, that the idea not only originated, but was brought to its present state of perfection, by that gentleman. It may be necessary, however, to state a few simple facts, which it is hoped will set this matter in its true light.

About the time Mr. Atkinson was making his experiments, a somewhat similar idea occurred to the late Anthony Bacon, Esq., and was tried by him in his houses, but without success. We have seen Mr. Bacon's original model, but, from its principle, it was incapable of carrying heat to any useful distance; and not until Mr. Atkinson directed the arrangement of the boiler and pipes, did it ever answer the desired end, in Mr. Bacon's houses. An account of its success in the Elcote gardens was published in the Transactions of the Horticultural Society, as well as in a provincial newspaper, by Mr. Whale, Mr. Bacon's gardener, as the plan of his late employer.

It would, however, have been only candid, had Mr. Whale, if he were aware of it, given in these communications the merit of the invention to the gentleman with whom it first originated. We will not attribute this step, on the part of Mr. Whale, to a wilful wish to mislead, or to bestow the merits of so useful an invention upon one who had only a minor share in it, and that share, however creditable to him, as an experimentalist, was not sufficiently perfected so as to answer the desired end. The death of Mr. Bacon following soon after the plan was brought to bear, prevents us from having his disavowal of the system as it now acts. Mr. Bacon certainly attempted a mode of heating by means of hot water, but had no idea of it in any other way than merely by heating the end of a tube filled with water, and by which he attempted to heat his houses, without the knowledge of the absolute necessity of a circulation. So far Mr. Bacon had a share in the introduction of this useful plan, that he readily entered into the merits of the hot-water system, and has the credit of being the first in whose garden it was put into practice.

Mr. Atkinson had proposed the heating by hot water to one or two of his friends, for whom he was building hot-houses at the time, but they considered the thing as speculative, and declined it. He, moreover, offered to heat one of the houses of a certain public garden by the same means, but the cautious managers declined running any risk. They have, however, since adopted the very same plan, which they should, out of justice to their respectable fellow-member, the inventor, have been the first to accede to.

It has been stated, that a circulation is capable of being carried on in one pipe, upon the supposition that the hottest portion of the water will flow along the upper part of the tube, while the colder portion will return below it to the boiler; but this has not been found to act in practice.

By means of one pipe, water may be made the vehicle of heating to a certain degree, but only by having the tops of both the boiler and reservoir closely fixed down, and constituting, in fact, a vessel in one piece; the boiler and reservoir being connected by their being elongated in form by the connecting tube.

Boilers with fixed tops depart from the simplicity of the original mode, and in themselves are objectionable, inasmuch as they have to be taken to pieces to have the deficiency of water made up, which is lost; and the difficulty of getting them cleaned, which is a point, if not attended to, that would soon end in their bottoms being burnt out, by the sediment of the water, however pure, forming an incrustation upon the inner side of the bottom, by which the water is prevented from touching it; and, at the same time, the fire acting upon the opposite side, without the counteracting effects of the water within, soon burns them out.

Add to this, should steam at any time generate within, the consequence may lead to accidents of a serious nature. All horticultural machinery should be constructed upon the least complicated plan possible. It would be a libel upon the intelligence of gardeners in general, to suppose them ignorant of the management of steam, in whatever way it may be applied for horticultural purposes; but it is not to be supposed that a gardener, who has many other things to think of, can sit all night and watch the progress of a steam apparatus; and few gardeners, generally speaking, have men of that talent allowed them who understand it; nor can the majority of garden-labourers be depended upon, either in regard to rewards or punishment, to attend to these matters.

Steam, for these and other more important reasons, is fast giving way to the hot-water system; and it is gratifying to see so many of those who were amongst the first to adopt steam, being amongst the first also to adopt the hot-water system, being now sensibly convinced of its superiority.

Seeing steam is abandoned, in consequence of the exorbitant expense of the first erection, the annual expense of keeping in repair, and the derangements to which it is liable, it is surprising that so many are not satisfied with the hot-water system, in its simplest state, when it is already sufficiently proved to answer every purpose expected, at least as applied to the heating of hot-houses.

Soon after smoke-flues began to be built upon scientific principles, improvements upon them sprung up, under the denomination of hot-air flues and cold-air flues, hot-air chambers surrounding the furnace, &c., all of which were found to be of no real use, but rather the reverse; and they possess no other merit than that of making the whole more complicated and useless. It would be well, therefore, of those who have the erection of the hot-water system, to bear this in mind; and while they improve, which we sincerely hope they will, that they will also keep the whole upon as simple a principle as possible.

In its original state, hot-water pipes cannot get out of order; but, by rendering them more complicated, the chances of derangement will increase. The more simple the construction, while, at the same time, durability, neatness, and sufficient power, are kept in view, the nearer to perfection will our attempts become.

The principal merits of the hot-water mode of heating forcing-houses, over that of every other method hitherto used, are many, and have been already decided. The important object of an almost equal distribution of heat into every part of the house, is attained, which has long been a desideratum, and which none before have accomplished. The water in the pipes, or reservoir, at the extremity of a house sixty feet long, is found to be within a few degrees of that in the boiler; thus giving a very equal temperature into all parts of the house.

The body of water, once heated in the boiler, pipes, and reservoir, is long in giving out all its particles of heat to the atmosphere of the house, even after the fire has long ceased to burn. Thus the person who has the charge of the fires may safely go to bed at nine o'clock, and by seven next morning find his house at nearly the same temperature in which he left it. This can never be relied upon when smoke-flues are used. The more capacious the boiler, pipes, and reservoir are, the longer will they continue to give out their heat.

The heat given out by hot water is free from all sulphureous and noxious gasses, which smoke-flues, however well constructed, or however good the fuel may be that is used, are evidently charged with, and which escape through the joints of the flues. It is really surprising, that we have been able to cultivate plants and fruits, natives of tropical countries, and of exquisite beauty and flavor, in an atmosphere so bad as that of our plant-stoves and forcing-houses, in the manner they have been hitherto heated.

That there is a very material saving in the expense of fuel, a very important consideration, and the principal cause that has prevented the more general erection of hot-houses in this country, is allowed by every one that has tried the hot-water mode of heating.

The expense of the first erection is somewhat more than brick-flues, and infinitely less than steam. The durability is much longer than that of either. The annual expense none; for, if once properly erected, it will last for years, and requires no cleaning nor repairs.

The materials used are cast-iron, for the boiler, pipes, and reservoir; and probably no substitute will be found to answer better. In most cases, the pipes hitherto used have been such as are used for conveying water through the metropolis; but, as the demand increases, pipes will be manufactured for the purpose, and will consequently be improved. Thus the clumsy flanger-joint will give place to a neat socket-joint, or probably a better may be devised, and the pipes may be cast in longer pieces, and thus require fewer of them. Some have used boilers of various dimensions and forms, and have used pipes of tin, earthenware, &c., which, if properly laid down, answer perfectly well, but of course are much less durable. The figure of both boiler and reservoir may be the same or not, and may be of any shape to suit circumstances; but that of a square-sided figure will be found in most cases the best, as affording greater facility in joining them to the pipes. The size of both boiler, pipes, and reservoir, should be in proportion to the size of the house and the temperature required. It is ascertained that a small boiler will heat a considerable-sized house; but as the additional expense of a larger one is not material, it will be better to have them in the first instance sufficiently large. The form of the pipes hitherto used, has, for the most part, been round; but it is thought that square ones, or shallow broad ones will answer better. Stone reservoirs have been recommended, and even stone pipes, but in most cases, these would be more expensive than iron ones, besides the difficulty of making them water-proof at the joints, as well as of procuring stone that would not admit of the escape of the water either by absorption or filtration.

The situation in which the boiler or reservoir should be placed, will depend entirely upon circumstances. In all cases, both should be placed within the house, as by that means no heat will be lost. The boiler may be placed in a recess in, or in front of the back wall, either at the ends or middle of a house, or between two houses; the fire to be got at from the back sheds; or it may be placed in the front of the house, either in the middle or ends, as above. When the house is of great length, the boiler being placed in the middle, the pipes may branch from it to the right hand and also to the left, and so extend to the ends of the house, and join to a reservoir; from which the returning pipe, being placed below the other, will convey the water back to the boiler to be again heated. When the degree of heat required is considerable, two upper pipes, or even three may be used, or they may be of greater size, presenting, in either case, as much surface as possible.

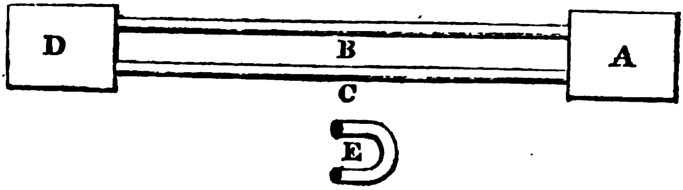
A green-house of two hundred feet in length, may be sufficiently heated in this manner with one fire; the boiler being placed in the middle under the stage, or in a niche in the back wall, and the pipes extending to right and left. In all cases, where it can be attained, the pipes should run parallel, and as near to the front wall or lowest part of the house as possible. The heat will always find its way to the highest parts; or, where houses are of less length, and connected, the boiler may be placed between two, and either one or both may be forced at the same time, with the same fire. In pine-stoves and pits, where most heat is required, two or three pipes are used to convey the heated water to the extremity; and this water is brought back to the boiler by one single pipe, having a slight inclination from the farthest end towards the boiler.

The hot-water system, applied in the frame or pit-ground, for the cultivation of young pines, early melons, cucumbers, forcing flowers, sea-kale, asparagus, &c., or for the protection of green-house plants, bids fair to give a new feature to that department; and we hope, through its adoption, to see the melon-ground soon a spot of some order and interest, instead of a dung-yard of the worst description, which it is at present. A very considerable length of pit-forcing might be carried on by hot water, and a temperature kept up, not only with regularity, but with little expense. The uncertainty of dung-heat, together with the expense of management and evident waste of manure, and the constant litter in which it keeps this department, will be got rid of, by substituting hot water. Fire-heat, by means of flues, can never be generally nor safely applied to pits or frames of ordinary dimensions, the flues occupying too much space, and the heat obtained being so unequally distributed, one end being burnt, while the other is freezing. This is not the case with hot water; the heat being uniform for any reasonable length, and the space occupying only a few inches. Four pits, each one hundred feet in length, and placed in two ranges parallel to each other, the back range being elevated, so that the front one should not shade it, which might be readily done by forming the ground upon which they are built as an inclined plane, one boiler placed in the middle between them, and having a course of pipes entering each pit from the boiler, and each making a circuit of a pit, and returning again to the boiler; or one pipe, of a larger diameter, might enter at the front of each of the two back pits, and extend to the farthest end, where they might make an elbow turn, or discharge into a reservoir, which, containing a body of heated water, would increase the temperature sufficiently for most purposes, and return by another, immediately below it, to the boiler. The others to enter at the back of the front range of pits, and make the same revolution as the others.

Thus, by one fire, four hundred feet of pits, averaging six feet in width, might be brought into use at little expense or trouble; and in them, a gardener of moderate attainments might produce a competent share of all the vegetable luxuries, that are to be met with, or wished for, at the tables of the great. These pits should be in divisions of three or four lights each; and such as are most remote from the boiler, should be occupied with radishes, salads of all sorts, sea-kale, asparagus, and such things as require the least degree of heat; and next to them should stand forced flowers, strawberries, young pine plants, &c.; and nearest to the boiler should be grown French beans, melons, cucumbers, &c. For a greater command of heat, the pipes may be larger next the boiler, or two pipes may be used, and afterwards united into one, at a certain distance; from which a sufficient degree of heat would be given for any vegetable that is cultivated in these structures. In such cases, the boiler should be enclosed in a separate space, covered over with a boarded top, instead of a glass one, which would be less liable to be broken; and, by being a non-conductor of heat, would therefore more readily prevent its escape.

The smoke might easily be made to pass off, so as not to affect the plants in the pits; and the whole pit-ground might be laid out with some share of taste, and so be an additional ornament, at once pleasing and useful.

The following will explain the principle upon which it acts: A is a boiler, to which the cast-iron pipe B is joined, and which is four inches in diameter; the uppermost of which B proceeds horizontally from the top of the boiler A, towards the opposite side, or end of the house, where it is joined to the reservoir at D, or it may make a turn at an elbow, as at E; this depends upon the size of the house. If large, the reservoir D, containing a large body of heated water, gives an increase of heat at the coldest end of the house, and renders the temperature there equal almost to that at the end next the boiler. C is a returning-pipe from the bottom of the reservoir D to the bottom of the boiler A. The boiler is set in brick-work, in the usual manner. As soon as the fire is lighted, and the water begins to heat at the bottom of the boiler, the particles of warm water, being lighter than those that are cold, ascend to the surface of the boiler, and gradually flow horizontally along the pipe B to the reservoir D; and the cold water in the reservoir, being heavier than that which is warm, gradually flows along the pipe C to the bottom of the boiler. As long as any heat remains in the brick-work round the boiler, this circulation is kept up. It is found in practice, that it is essentially necessary to have two pipes employed, one from the top and one from the bottom of the boiler, connected at the end, either by a reservoir, as at D, or by an elbow-pipe, as at E, to keep up this circulation. The boiler is furnished with a wooden cover, and the reservoir with an iron one: the former is preferred, as the water in the boiler will always be rather warmer than that in the reservoir; the wooden cover being a better non-conductor of heat than the



iron one over the reservoir, and is used to regulate the temperature of the house.

The section of a vinery heated by hot water will give a pretty good idea of the principle upon which it acts: (*a*) is a boiler two feet and a half long, eighteen inches wide, and twenty inches deep, and placed in a niche in the back wall of the house; from the end of the boiler proceed horizontally three cast-iron pipes, of four inches diameter; two of them are joined to the boiler near the top, and proceed upon a level to the front of the house, and along the front to the farthest end, where they empty themselves into a reservoir, or make a turn by an elbow-joint in the pipe, as circumstances may direct. In either case, the water is conveyed back again to the boiler by a single pipe, which is placed directly under the two upper ones, and enters the boiler near its bottom. The fire is fed and managed from behind, in the usual manner, in the back sheds (*b*).—*See Plate.*

VENTILATORS.

Hot-houses built with fixed roofs require a different mode of ventilating, than those which have the roof-sashes made moveable; all curvilinear houses, without incurring a great expense, belong to this class. The most approved method of ventilating houses of that description, are by having apertures formed in the front, or parapet wall, under each sash, of sizes differing according to the magnitude of the house, or the purposes for which such house is intended. These apertures are furnished with wooden doors or lids, which are opened more or less, and shut at pleasure, either individually or all at the same time, by means of a sympathetic movement. The top part of the back wall is also furnished with corresponding apertures for the escape of heated or foul air, and are either made to pass directly through the wall, or to turn upwards through the coping, and are, in either case, also opened and shut up by the same means. According to this plan, a body of fresh air is constantly passing into the house from the front ventilators, during the time they are open; while from the top ones the heated air, being more light, readily escapes, and the space emptied by such air escaping is immediately filled with fresh air from below, which circulates through the house, until it becomes sufficiently heated to find its way out. This important improvement in the necessary change of air in hot-houses was first brought into notice by W. Atkinson, Esq., and has been employed, with every success, in the numerous hot-houses built under the direction of that gentleman. The cold air passing into houses in this manner, having to pass over the flue immediately upon entering the house, becomes moderated in temperature, so that it cannot possibly injure the most delicate bud or flower; while the methods formerly in use possessed this defect, that the necessary fresh air, however cold it might be, was let in close upon the trees by opening the sashes, and while the tree was warm within. Thus a number of currents of cold air were in an instant let in upon them, which could not but prove of much injury to them in their more tender state. Nothing is so injurious to vegetables, as well as to animals, as sudden transitions from excessive heat to excessive cold. For early forcing, this mode of ventilating is decidedly the best, and all houses, whether for early or late crops, should be provided with such ventilators, thereby affording the means of giving air in cold or wet weather, when it could not be with safety admitted by the roof-sashes.

FOOTPATHS.

Footpaths have hitherto most generally been composed of mere planks, laid upon the borders to walk on; in other cases, lattice-work has been adopted, supported on blocks of wood, in order to admit the sun and air to the border below, and to prevent its being much trodden on by walking. Neat wooden footpaths, painted and elevated two or three inches above the border, are not objectionable; but the neatest and most permanent are constructed of cast-iron plates, made to rest upon props, at a proper height from the ground. These cast-iron gratings can be made to any pattern, and of lengths convenient for their being removed, and placed down again at pleasure. These gratings are well adapted where the path passes along above the flue, as they not only prevent the covers from being broken, but also allow the free escape of the heat. Such gratings have been adopted in the forcing-houses at Sion-house, and have a very good effect. Their expense is not more than that of neat well-made wooden footpaths, with this advantage, that they look much neater, and will last ten times as long.

GLAZING AND PAINTING.

It is necessary that all hot-houses should be glazed with the best crown glass, as admitting a greater share of light to the plants contained therein, and not with glass of an inferior quality, as was long the practice. Formerly less attention was paid to this important point, and on the continent, to this day, many extensive ranges of hot-houses are glazed with glass of a very inferior quality. It appears, by the experiments of Bouguer, that one-fortieth part of the light, which falls perpendicularly on the purest crystal, is reflected off, nor does it pass through it; it may be safely asserted, that green glass reflects off more than three-fourths. There is nothing gained by using bad glass in the glazing of hot-houses, but evidently much is lost.

Various shapes have been recommended for the panes, or pieces of glass, for which purpose the most reasonable is that of the rectangular or curvilinear; but for hot-bed frames, the fragment form may be used as cutting less to waste. The first of these is the original form, and is still the most frequently met with; the second looks neater, and has this advantage, that it aids in conducting the water which falls on the roof to run down in the centre of the pane, by which means, it is less likely to get into the house, between the glass and the bars.

In either case, it is of importance that the glass be cut exactly to fit the space, which it is intended to cover, not being put in too tightly, which renders it more apt to be broken by any shaking of the sash; nor yet too narrow, which would admit the water to enter into the house; and that it be well bedded in good old putty, so as to lie solid, and therefore sustain a greater pressure. A great fault in the glazing of hot-houses is allowing too much overlap, that is, one pane projecting over the other too much; and it is difficult to get tradesmen to attend to this very important point. The broader the lap is, the more liable is the glass to be broken, as it contains a greater body of water, conveyed into it by capillary attraction; and when such water becomes frozen, the expansion is so great, as not only to break the glass, but it soon fills up with earthy matter, forming an opaque space, which are both injurious, by excluding a large portion of light, and also disagreeable to the sight. The accidental filling up of such spaces with filth, probably first gave the idea of filling the laps up with putty of various colors, principally black, and was an important improvement in hot-house glazing; soon after followed the adoption of narrower laps, either puttied or left open.

Laps of less than a quarter of an inch, in either rectangular or curvilinear formed panes, may be puttied without having a bad effect, and will materially aid in preventing the glass from being broken. The expansion of water by frost, which lodges between the laps, breaks more glass than any other natural cause whatever. This mode of closing the lap, either for the exclusion of cold or wet, is more durable, and less troublesome in repairing, than any other. The smaller the laps are, so that they cover the joint perfectly, the neater will they look, and the less liable will they be to be broken.

Putty of the best quality should only be used for hot-house glazing, and that called *soft putty,* being formed of well wrought paste of flour of whitening and raw linseed oil, is the best and most durable, because it forms an oleaginous coat on the surface, and requires longer time to dry. Other sorts have been used and recommended, but the difficulty of getting it out in repairing is so difficult that it is found advisable to use only the *soft putty.* Of the various forms of glazing, may be mentioned the following: the rectangular; the fragment; the perforated shield; the entire shield; the rhomboidal; the curvilinear lap; the reversed curvilinear, &c.

A strict attention to painting the houses in some regular order, or at stated times, has not been sufficiently attended to. The expense is certainly considerable; but, in the end, a strict attention to this particular will be found a great saving. Paints of the best quality should be used, and, as light is the object in view, white of all colors is to be preferred, or next to that, light stone color. In painting newly erected houses, they should not be considered as finished with less than three good coats, and should be painted every second or third year, with one coat on the outside, and for the inside, once in four or five years will be sufficient.

TRELLISING.

Trellising is now universally made of wire, as being lighter, stronger, and more durable than wood, and capable of being put up at much less expense. The distance at which wires should be placed from each other, as well as from the walls, or glass, depends upon the trees intended to be trained upon them. For grapes, a foot from the glass, and fourteen inches apart, will be found sufficient; for peaches, nectarines, cherries, or plums, one foot from the glass, and nine or ten inches apart from each other. Grapes trained up the rafters of pine-stoves, &c. should be one foot from the rafter, and to form a triangular trellis, composed of three courses of wire, to which they should be secured. Vines are sometimes trained up the rafters of green-houses, in the same manner. The trellises should be so arranged as to afford the greatest possible surface for training upon, without creating confusion or shade. Vines are most generally trained up the roof, covering the whole surface, at a distance sufficiently secure to prevent the foliage from being scorched, yet near enough for the wood and fruit to enjoy as much sunshine as possible. In metallic houses, the distance from the glass should be greater than in wooden ones. Peaches, nectarines, &c. are sometimes trained in the same manner as vines, but they are more generally trained to the back wall, having a curved trellis in front, extending from the front parapet to within a sufficient distance of the back wall to admit of a walk of sufficient breadth. This curve is more or less, according to circumstances, but should be kept as high as possible, so as to enjoy as much benefit from the glass as can be obtained, but still not so much as to shade in any degree the back wall. In houses of ordinary dimensions, trellises constructed in this manner will admit of a great surface for training upon. We have constructed with success perpendicular gable trellises, exactly placed under every alternate rafter in houses trellised as above, and never failed of having very good fruit in all parts of the house. This we consider is giving the greatest possible extent of trellis that can be introduced into any house. It has been asserted, that such perpendicular trellises shade the other parts of the house; but this is not the case, if due attention be paid to training in the shoots, as they advance in a regular manner to the trellis; a practice which should be attended to upon every trellis; and so convinced are we of the propriety of such a mode of training, that were we to construct peach-houses to any extent, the larger part should be trellised in this manner. In houses for very early forcing, the back wall only is trellised, such houses being very justly constructed on a narrow scale, and training too near the glass in them, might be attended with accidents.

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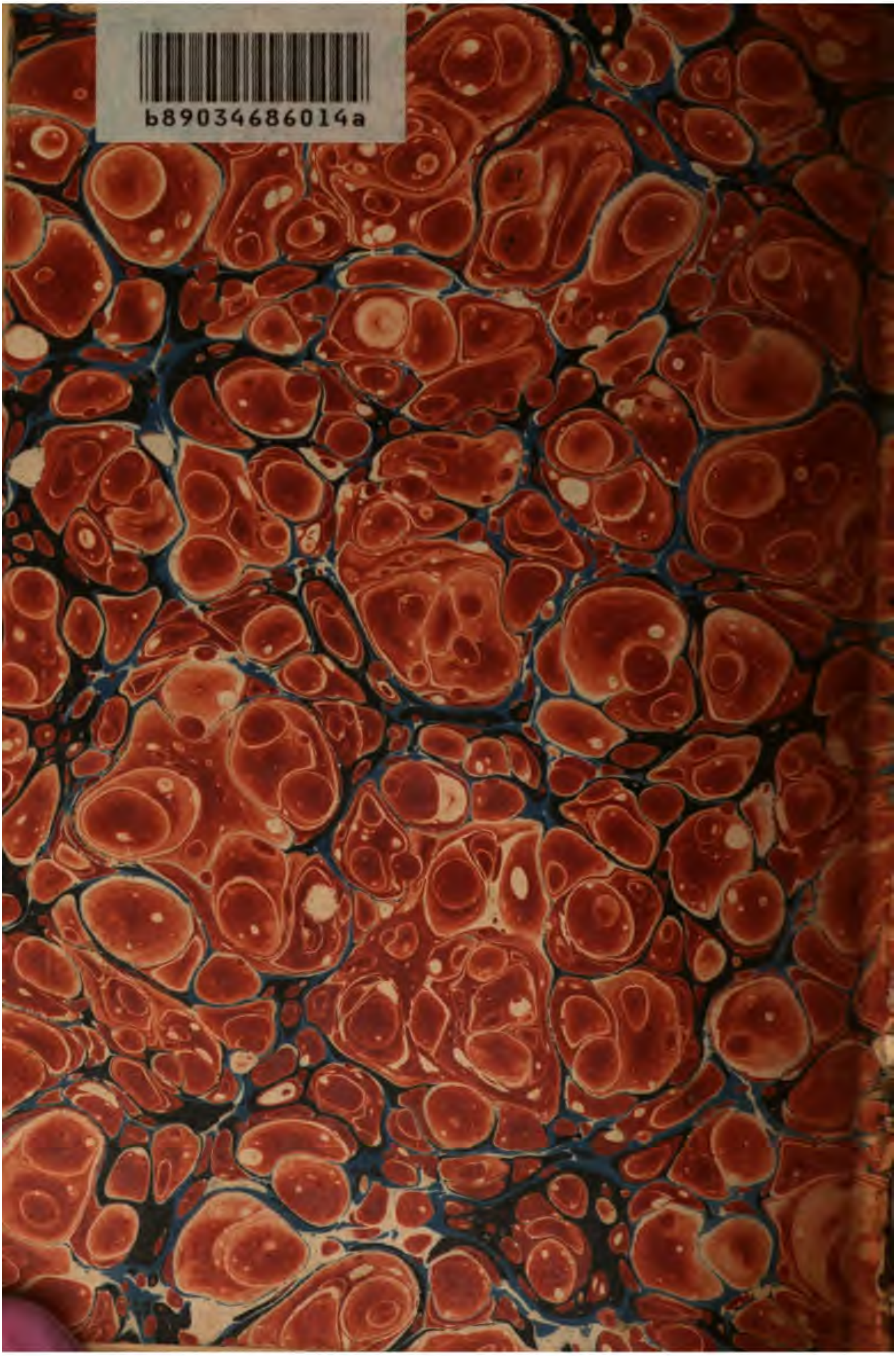

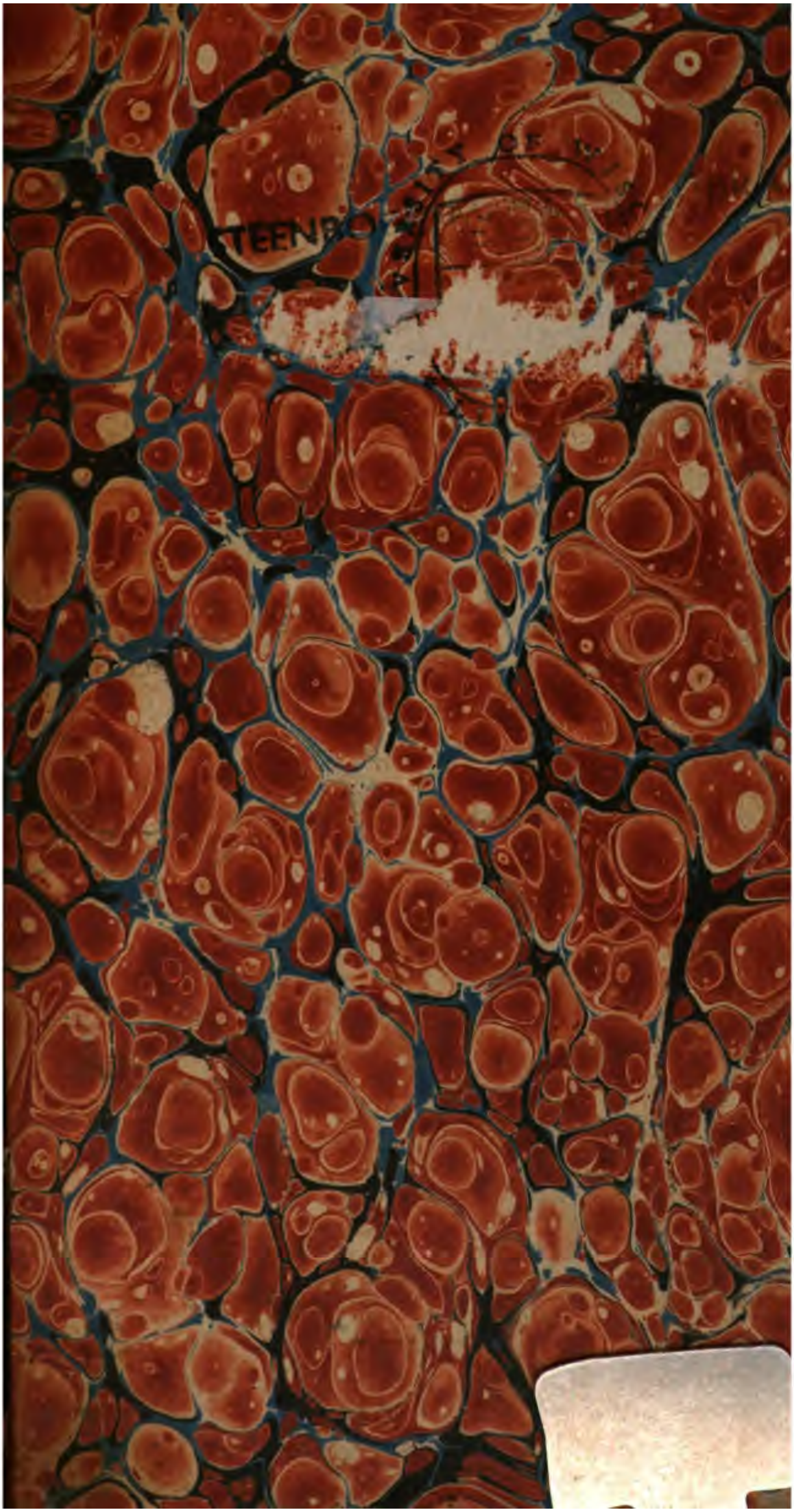

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